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> DOUGLAS AIRCRAFT COMPANY TORRANCE (C6) FACILITY PHASE III GROUNDWATER AND SOIL INVESTIGATION REPORT

Woodward-Clyde Consultants



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DOUGLAS AIRCRAFT COMPANY
TORRANCE (C6) FACILITY
PHASE III GROUNDWATER AND SOIL
INVESTIGATION REPORT

Prepared for:

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TABLE OF CONTENTS

1.0	INTRODUCTION	L
2.0	SCOPE AND OBJECTIVES	2 3
3.0	FIELD PROGRAM 3.1 Soil Boring Installation	4 4 5
4.0	RESULTS 4.1 Geology	6 7 8 9 1 1
5.0	EVALUATION OF GROUNDWATER TREATMENT OPTIONS 5.1 Description of Treatment Options 5.1.1 Activated Carbon Adsorption 5.1.2 Air Stripping 5.1.3 Oxidation 5.2 Discussion	14 14 15 16
6.0	REFERENCES	17
	LIST OF FIGURES	
1 2 3	Site Location Map	3
	LIST OF TABLES	
1 2 3 4 5	Slug Test Data Reduction	8 9 11

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LIST OF APPENDICES

- Field Procedures and Aquifer Testing Data Analysis Boring Logs Analytical Results Α
- В
- С

DOUGLAS AIRCRAFT COMPANY'S TORRANCE (C6) FACILITY

PHASE III GROUNDWATER AND SOIL INVESTIGATION REPORT

1.0 INTRODUCTION

The purpose of this report is to present the results of Task I and IA of the Phase III groundwater and soil investigation at the Douglas Aircraft Company's Torrance (C6) facility. The C6 facility is located at 19503 South Normandie Avenue in Los Angeles, California (Figure 1). Woodward-Clyde Consultants (Woodward-Clyde) has conducted two previous investigations (1987 and 1988) in the area of Tank Cluster The results from these investigations 15T through 18T. identified this tank cluster as a potential source of in the compounds identified (VOCs) volatile organic information background Additional groundwater. Woodward-Clyde these earlier from analytical results investigations can be found in the reports submitted to the California Regional Water Quality Control Board (CRWQCB), Los Angeles Region, dated April 1987 and 10 May 1988.

2.0 SCOPE AND OBJECTIVES

The specific scope and objectives of the Phase III groundwater and soil investigation are outlined below. Objectives were to:

- Evaluate the quality of the groundwater entering the site in the apparent hydraulic upgradient direction of Tanks 15T through 18T.
- 2. Assess the lateral and vertical extent of VOCs in the groundwater in the vicinity of Tanks 15T through 18T.
- 3. Evaluate the potential for offsite migration of VOCs in the groundwater.

- 4. Obtain quantitative estimates for aquifer parameters in the shallow and deep zones within the semi-perched aquifer (to depths of 130 to 150 feet). These parameters are required for design of a remedial program.
- 5. To estimate the lateral and vertical extent of VOCs in the soil around Tank Cluster 15T through 18T.

These objectives were accomplished using an approach comprised of the following tasks:

- o Task I Installation of five shallow (70 to 90 feet) observation wells (WCC-6S, -7S, -8S, -9S, and -10S) and two deep (120 to 140 feet) observation wells (WCC-1D, and -3D). In addition, Task I involved advancing four soil borings in the vicinity of Tank Cluster 15T through 18T.
- o Task IA Slug testing of six shallow wells and two deep wells.
- o Task III Aquifer testing.
- o Task IV Evaluation of data and report preparation.

The background for this investigation and a description of the tasks is described in Woodward-Clyde's work plan approved by the CRWQCB entitled "Douglas Aircraft Company Torrance (C6) Facility Phase III Ground Water and Soil Investigation Work Plan," dated 9 February 1989. This report presents the results obtained to date from Tasks I, IA, III and IV. Task II wells were not considered necessary for this phase of investigation, based on results from Task I wells.

2.1 Task I

The work performed during Task I involved advancing four soil borings (B-6, -7, -8, and -9), each to a depth of approximately 65 feet, around Tank Cluster 15T through 18T, to evaluate the extent of VOCs in this area. This task also

involved installing wells at two depths in the upper water-bearing unit called the semi-perched aguifer. The upper zone wells are screened from 60 to 90 feet below ground surface, with the static water level at approximately 70 feet below ground surface. These upper zone wells will henceforth be referred to as "shallow" wells. The lower zone wells are screened from 120 to 140 feet below ground The lower zone wells will henceforth be referred surface. The installation of observation wells to as "deep" wells. within the upper and lower zones of the semi-perched aquifer was designed to evaluate differences in vertical gradient and concentrations of VOCs within the semi-perched aquifer. Observation Wells WCC-1D, -3D, -6S, -7S, -8S, -9S, and -10S have been installed in accordance with Task I of the work The observation well locations are shown on Figure 2. Task I also included development of the observation wells, and the collection and analysis of groundwater samples. Wells WCC-1S through WCC-5S had been installed during an earlier phase of work.

2.2 Task IA

The objective of Task IA was to conduct slug tests on six shallow wells and two deep observation wells to provide preliminary estimates of hydraulic conductivity in the shallow and deep zones of the semi-perched aquifer. These data have been used in estimating groundwater velocity and the distribution of VOCs in the groundwater within the subject area.

2.3 Task III

Woodward-Clyde conducted a pump test at the Torrance facility to observe the response of the semi-perched aquifer to hydraulic stresses created by pumping. The results obtained from the pump test and the method of conducting the test are described in Appendix A.

3.0 FIELD PROGRAM

3.1 Soil Boring Installation

Four soil borings, B-6, -7, -8, and -9, were drilled around Tank Cluster 15T through 18T, as shown on Figure 2. Each soil boring was drilled to a depth of 66.5 feet below ground surface. The purpose of the borings was to assess the vertical and horizontal extent of VOCs in the vadose zone soil in the vicinity of the tanks. Borings B-6 and B-7 were placed along the south side of the tanks, while Borings B-8 and B-9 were placed about 40 feet away, to the east and north of the tanks, respectively.

Field procedures used for drilling and sampling activities are described in Appendix A. The lithologic boring logs from B-6, -7, -8, and -9 are presented in Appendix B. The results of soil sample analyses from these borings are presented in Section 4.4.

3.2 Observation Well Installation

Seven observation wells were installed during Task I of this investigation, as previously discussed in Section 2.1. Five of the wells were completed to a depth of 90 feet, and two were completed to a depth of 140 feet. The locations of these wells are shown on Figure 2 and the procedures involved in the installation are described in Appendix A.

Of the five shallow wells, the first, WCC-10S was completed near the northwest corner of the property. This location was chosen to provide information on the quality of groundwater entering the site. The second and third wells, WCC-7S and -8S, were installed downgradient of Tank Cluster 15T-18T to assist in evaluating the lateral extent of VOCs in the groundwater. Observation Well WCC-7S was placed about 160 feet south of WCC-4S, and WCC-8S was placed

approximately 125 feet north of WCC-1S. These locations were chosen considering variations in the direction of groundwater flow (southeast) previously measured at the site, and the concentration level of VOCs in WCC-1S, -3S, and -4S.

The two deep wells were installed to assess the possibility of VOCs migrating vertically downward into the lower zone of the semi-perched aquifer. Well WCC-3D was installed approximately 30 feet east of the tank cluster, and WCC-1D was completed about 190 feet east-southeast of WCC-3D, next to WCC-1S. These wells were also installed to evaluate the differences in hydraulic conductivity between the deep and the shallow zones of the aquifer.

As proposed in the Phase III work plan, Wells WCC-6S and WCC-9S were installed after receiving chemical analysis results from the three initial shallow observation wells (i.e., WCC-7S, -8S, and -10S). Because the results indicated VOCs were present at elevated concentrations in WCC-7S, Wells WCC-6S and WCC-9S were installed in locations which could intercept a more south to southeast path of migration than the wells previously installed.

3.3 Observation Well Slug Testing

Task IA involved conducting slug tests on six shallow wells, and two deep wells, to obtain estimates of horizontal hydraulic conductivity (k) values in the immediate vicinity of the six wells for the shallow and deep zones. Slug tests were completed on shallow Wells WCC-4S, -5S, -7S, -8S, -9S, and -10S. Two deep wells WCC-1D and WCC-3D were also slug tested. Testing dates were 19 July, 31 August, and 4 October 1989. An Envirolabs Data Logger, model DL-120-MCP equipped with a pressure transducer was used for raw data collection. Slugs of water being introduced and withdrawn

from each well were simulated by volume displacement using a 39-inch-long, 3.25-inch-diameter mandrel constructed of PVC pipe and plugs, and filled with silica sand. The slug test procedures and subsequent data analysis are described in Appendix A, while the slug test results are discussed in Section 4.2.

3.4 Pump Test

As part of Task III of this investigation, Woodward-Clyde conducted a 30-hour, constant discharge pumping test on 20 through 21 December 1989 at the Torrance (C6) facility. Well WCC-4S was pumped using a 1-1/2 horsepower submersible Observation wells included WCC-1S, -4S, -6S, -7S, -8S, -9S, and -1D. Five of the wells were automatically monitored for water level using three Terra-8 data loggers equipped with a total of five pressure transducers. addition, water levels were measured at regular intervals for all of the wells except WCC-1S, -1D, and -4S (monitored by data logger), using a Solonist electrical well sounder. Water level monitoring continued from the time the pump was switched on until two hours after the pump was switched off. The pump test procedures and the subsequent data analysis are described in Appendix A and the pump test results are discussed in Section 4.3.

4.0 RESULTS

4.1 Geology

The general description of shallow (less than 90 feet below ground surface) geologic deposits beneath the site was developed from borings drilled during this and previous Woodward-Clyde investigations (Woodward-Clyde 1987 and 1988). Knowledge of deep lithologic conditions (between 90 and 140 feet below ground surface) is primarily based on investigations by Hargis and Associates at the Montrose site

adjacent to the southern boundary of the DAC Torrance facility (C6) in 1986 and 1988, and from installation of WCC-1D and -3D in 1989 by Woodward-Clyde.

Borings at the site have encountered predominantly clays and silts to depths of 25 to 50 feet. Below that depth, in an interval previously described as the semi-perched aquifer, sedimentary deposits appear to change laterally over short distances, making correlation of specific lithologic units difficult. This is typical of flood-plain alluvial deposits that include sand-filled channels with interbeds and lateral gradation to finer-grained material.

The upper portion of the semi-perched aquifer appears to silty sands consist of sands and with occasional, discontinuous interbeds of silt and clay. This portion extends from below the near-surface clay deposits to depths of approximately 110 feet below ground surface. portion of the semi-perched aquifer is composed of thinner beds of sand, silty sand, and minor amounts of silt. portion appears to be confined between clay layers at depths of between 115 and 135 feet below ground surface.

4.2 Slug Testing Results

Results from slug testing of Observation Wells WCC-4S, -5S, -7S, -8S, -9S, -10S, -1D, and -3D, including the data Hydraulic Table reduction, are summarized in 1. conductivity values ranged from 24 to 140 gallons per day per square foot (gpd/ft²) in the shallow wells. values are typical of the sandy silts and silty sands encountered during drilling in the shallow water bearing zones of the semi-perched aquifer. The calculated hydraulic conductivity values were 21 gpd/ft² for WCC-1D and 6.6 gpd/ft² for WCC-3D.

4.3 Pump Test Results

The pump test data from each well showing a discernible response were analyzed using one or more of the following techniques: Recovery (Residual Drawdown) plot, Cooper-Jacob Time Drawdown plot, and/or Distance/Drawdown plot. A summary of the results is presented in Table 2. Slug test values obtained earlier are included for reference.

The hydraulic conductivity value derived from the pump test at the pumping well, WCC-4S, was 470 gpd/ft² based on analyses of recovery data (residual drawdown). These values are similar to the pump test values calculated using both the Cooper-Jacob method and the Distance Drawdown method using data from the surrounding observation wells. Overall, the calculated hydraulic conductivity values vary within a factor of two (see Table 2). Local variations in stratigraphy can account for this level of variability.

The conductivity values calculated from the slug tests are not directly comparable with conductivity values calculated from the pump test, since the former only tests the portion of the aquifer immediately adjacent to the well screen, while the pump test stresses a much larger volume of the aquifer. Overall the slug test hydraulic conductivity values are roughly on an order of magnitude lower than the pump test values. This level of variability is not surprising given that the specific assumptions and mechanics of the two test techniques are remarkably different.

Variations in the storage coefficients are somewhat greater than those for transmissivity. Fairly wide variations in the calculated storage coefficient are not unusual and, in general, have a minimal impact on the calculated yield.

4.4 Groundwater Gradient and Velocity

The groundwater gradient was calculated from the groundwater elevation data collected on 18 October 1989 (see Table 3), using Equation 1-1 as follows:

$$I = \frac{h_1 - h_2}{L} \tag{1-1}$$

Where:

[= Gradient (ft/ft)

 h_1 = Upgradient groundwater contour elevation (feet)

 h_2 = Downgradient groundwater contour elevation (feet)

L = Distance between groundwater contours (feet)

Based on groundwater level data of 18 October 1989, the gradient across the C6 facility appears to be south to southeast as shown on Figure 3. The gradient was calculated using the assumption that all water bearing strata in this area act as one hydrogeologic unit. This assumption is considered valid for preliminary evaluation of flow velocity and the extent of VOCs in the groundwater.

A gradient of 0.002 ft/ft towards the south-southeast was calculated using Equation 1-1.

The groundwater velocity was calculated from Darcy's equation:

$$V = \frac{KI}{7.48 n_o} \tag{1-2}$$

Where:

- V = Groundwater velocity (feet per day)
- K = Hydraulic conductivity of the media based on slug test values calculated in Section 4.3 (gal/day/ft²)
- I = Groundwater gradient calculated from Equation 1-1
- 7.48 = The number of gallons of water per cubic foot
- n_e = Effective porosity of the saturated media

Assuming:

- K = 715 gal/day/ft² for shallow wells NOTE: The hydraulic conductivity value used in the calculation was the average of the values obtained from all the pump test analytical methods used.
- I = 0.002 ft/ft calculated from Equation 1-1
- n_{o} = 0.30 for silty fine-grained sand.

Based on the calculations and assumptions above and the results obtained from the pump test, the groundwater velocity is approximately 0.64 feet per day or 234 feet per year in the shallow zone of the semi-perched aguifer.

There does not appear to be a significant vertical groundwater gradient between the shallow and deep portions of the aquifer. The approximately equal static groundwater measured in the associated shallow deep observation wells WCC-1S and -1D, and WCC-3S and -3D, indicate the major component of groundwater flow horizontal.

4.5 Soil Sampling and Analytical Results

Soil samples were collected from all the observation wells and soil borings installed during the field program as described in Appendix A. Samples which had elevated OVA headspace readings and which were in close proximity to tank Cluster 15T through 18T, as well as samples from WCC-6S, were selected for analytical testing. Soil samples at selected depths from B-6, B-7, B-8, B-9, and WCC-6S were analyzed by EPA Method 8240 at West Coast Analytical Service (WCAS) in Santa Fe Springs. A summary of results is presented in Table 4, while the analytical data sheets provided by WCAS, and chain-of-custody forms are presented in Appendix C.

The soil sampling results show low concentrations of organic compounds present in most of the borings installed around tank cluster 15T through 18T. Boring B-6 seems to be located near the source of the release. At this location soil column contained elevated levels of compounds beginning at a depth of 20 feet and continuing down to at least 60 feet. At the other boring locations the organic compound concentrations became elevated at depths of 40 feet or more. Both halogenated and nonhalogenated compounds are present at location B-6, with the higher concentrations of each present at a depth of 20 feet. Toluene was the dominant nonchlorinated hydrocarbon present 1,1,1-trichloroethane (1,1,1-TCA)and trichloroethylene (TCE) were the dominant chlorinated hydrocarbons. At Boring B-7, which is located about 30 feet east of Boring B-6, a similar mix of compounds is present, however, their concentrations are at a greater depth in the boring. highest concentrations of compounds are present at a depth of 60 feet, with methylene chloride identified in the soil for the first time at this depth. Samples from Boring B-8, which is located east of the tank cluster, also contained low (<1 ppm) concentrations of compounds except for toluene, which was present at 25 ppm at a depth of 65 feet. Samples from Boring B-9, which is north of the tank cluster, also contained low concentrations of compounds at depth (generally less than 1 ppm).

Three samples collected at, and just below, the water table from the borehole in which Well WCC-6S was installed, contained low concentrations of MEK (9.4 ppm), MIBK (8.4 ppm), toluene (1 ppm), and a compound tentatively identified as butyl cellosolve (0.3 ppm).

4.6 Groundwater Sampling and Analytical Results

During this task, two rounds of groundwater samples were collected and analyzed during July and August from monitoring Wells WCC-1D, -3D, and -1S through -10S, except WCC-6S and WCC-9S. These two wells were the most recently installed, and water sampling was completed the first week in October. The procedures used during these sampling efforts are described in Appendix A.

All of the water samples tested, including groundwater samples, duplicates, rinse blanks, and trip blanks, were analyzed for VOCs by EPA Method 624 by WCAS. For the first round of sampling, one sample from each well, two duplicate samples, three rinse blanks, and one trip blank were analyzed. Analysis of water samples from the second round included one sample from each well, two rinse blanks, and one trip blank.

The groundwater analytical results are summarized in Table 5. Analytical data sheets provided by WCAS, and chain-of-custody forms are attached in Appendix C.

The data indicate that of the 10 shallow wells sampled at the facility, WCC-2S, located upgradient of Tanks 15T through 18T, WCC-5S and WCC-9S, both located along the eastern boundary of the site, contained total VOCs at or below 30 ppb, predominantly TCE. One well, WCC-10S, contained TCE at about 80 ppb and less than 5 ppb of chloroform. The other six shallow wells all contained a similar mix of VOCs, with the dominant compounds being TCE, 1,1-dichloroethene (1,1-DCE), and 1,1,1-TCA, with lower concentrations of cis-1,2-dichloroethene (cis-1,2-DCE) also present.

The deep well closest to the tank cluster (WCC-3D) contained 1,1,1-TCA at concentrations of around 50 ppb on the first occasion the well was sampled. Trace amounts of TCE, toluene, and cis-1,2-DCE were also present. When the well was resampled one month later only 1,1,1-TCA was detected, but the detection limits were ten times higher for the other compounds measured in the first round of sampling because of a laboratory error. Samples from the other deep well (WCC-1D), contained low concentrations of 1,1,1-TCA (1 ppb), TCE (2 ppb), and cis-1,2-DCE (1 ppb). The total VOC concentration in Well WCC-1D was less than 10 ppb.

The water quality data collected to date indicate the presence of TCE in the groundwater (Well WCC-10S) entering DAC's Torrance (C6) facility. The TCE concentration was measured at approximately 80 ppb, nearly an order of magnitude higher than the TCE concentration in Well WCC-2S, upgradient of Tanks 15T through 18T, and Wells WCC-5S and -9S at the downgradient boundary of the site. Wells WCC-7S and WCC-8S are located south and north, respectively, of the previously identified area of groundwater containing VOCs.

5.0 EVALUATION OF GROUNDWATER TREATMENT OPTIONS

Concurrent with field investigations performed Woodward-Clyde at the Torrance facility, an evaluation was of treatment options for groundwater containing chlorinated and non-chlorinated hydrocarbons at the site. It was originally the intent of Douglas Aircraft Company to conduct a pilot evaluation of groundwater treatment systems using water produced during the pump test at the site. However, the quantity of water produced during the pump test was not enough for pilot tests, and so bench evaluation will be conducted. The tests will be conducted on some of the systems described in the following sections.

5.1 <u>Description of Treatment Options</u>

There are many treatment systems for the removal of organic compounds from groundwater. Three of these systems are:

- o Activated Carbon Adsorption
- o Air/steam Stripping
- o Oxidation

Woodward-Clyde assumed a flow rate of 50 gallons per minute (gpm) and organic concentrations at the levels found in WCC-4S for the characteristics of the influent in this treatment evaluation. The effluent organic concentrations assumed for this evaluation were the California State Action Levels.

5.1.1 Activated Carbon Adsorption

The process of adsorption onto activated carbon involves contacting the organic contaminated groundwater with the carbon, by flow through a series of packed bed reactors. The activated carbon selectively adsorbs chemical

constituents by a surface attraction phenomenon in which organic molecules are attracted to the internal pores of the carbon granules.

Once the micropore surface are saturated with organics, the carbon is "spent" and must be replaced with regenerated or virgin carbon. The time to reach "breakthrough" or exhaustion is the most critical operating parameter. Carbon longevity balanced against influent concentrations governs the operating economics.

5.1.2 Air Stripping

Air or steam stripping is a mass transfer process in which organic constituents in groundwater are transferred to the gas phase (in air/steam). Air or steam stripping frequently accomplished in a packed tower equipped with an The packed tower works on the principle of countercurrent flow. The influent water flows down through the packing, while the air/steam flows upward, exhausted through the top. Volatile, soluble components have an affinity for the gas phase and tend to leave the aqueous stream for the gas phase. The gas phase effluent must be controlled. This is usually accomplished by using a carbon scrubber for air stripping and a vapor condenser followed by product-water separator for steam stripping.

Woodward-Clyde reviewed the Ejector System, Inc. cascade air stripping. This system is designed to accommodate field changes by allowing for the addition or subtraction of cascade tray modules as conditions dictate. The system is low profile and units are typically shipped completely assembled. Other systems, such as the Aquadetox process, use the same basic principles.

5.1.3 Oxidation

Treatment of groundwater using oxidation is not a new process. New applications using hydroxyl radicals as the oxidizing agent are now available. These radicals can be produced by: ultraviolet (UV) light, hydrogen peroxide, and/or cavitation reactions. Organic constituents are oxidized to carbon dioxide and water by the hydroxyl radicals.

Two types of oxidation systems which Woodward-Clyde evaluated were the CAV-OX process and the Perox-pure process. The CAV-OX process uses induced cavitation and UV light to allow oxidation to occur. The Perox-pure system uses hydrogen peroxide and UV light to cause the oxidation process.

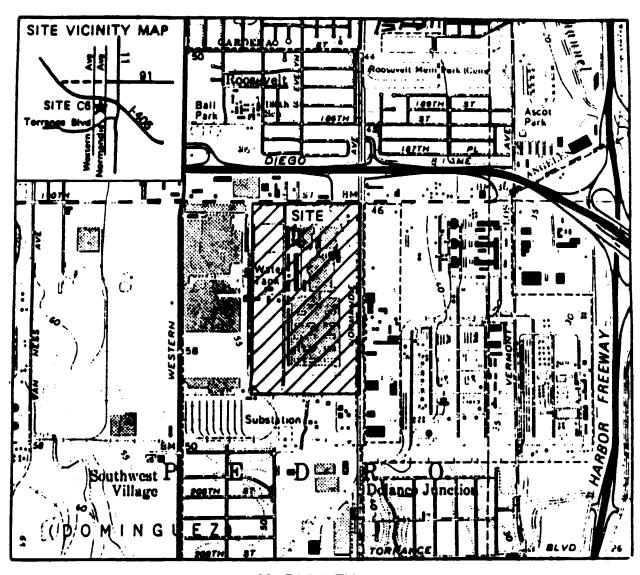
Representatives from each of the vendors expressed the need for bench scale testing in order to better estimate the operation and maintenance costs associated with their system. Such evaluations will be conducted by Douglas Aircraft after bench scale testing has been completed to aid in the selection of an appropriate system.

5.2 Discussion

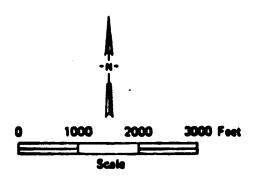
During this alternative review, vendors contacted indicated that treatability studies done on laboratory scale are completed for a fee. Generally this fee is charged to recoup analytical analysis cost incurred during the testing of the systems. Two types of systems will be evaluated by Douglas Aircraft Company for possible treatment methods for the C6 facility: air/steam stripping and oxidation. These laboratory tests will allow vendors to better conceptualize the required treatment scheme. Also, this will allow an analysis of capital and operation costs for each system and it will help to evaluate the effectiveness of the systems.

6.0 REFERENCES

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PROJECT: DOUGLAS AIRCRAFT CO.

PROJECT NO.

8941863J

C6 FACILITY LOCATION MAP

FIG. 1

TABLE 1 SLUG TEST DATA REDUCTION

DOUGLAS AIRCRAFT C6 FACILITY, TORRANCE CALIFORNIA

Where:

K = Hydraulic Conductivity

Rc = Radius of well casing in feet

Re = Effective Radius of influence (ft)

Yo = Initial drawdown at time t =0 (sec)

H = Distance from base of well to SWL (ft)

A = Constant Based on L/Rw

Yt = Drawdown at time t (sec)

Dw = Depth of well (ft)

Depth to water(ft) - Measured 19 July, 30 August, and 4 October 1989.

Rw = Radius of Boring in feet

L = Length of screen of saturated thickness if entire screen is not saturated in feet

t = Selected time/drawdown semi-log plot (sec)

D = Thickness of aquifer in feet

(Bottom of aquifer approx. 150 feet)

B = Constant based on L/Rw

	WCC	;-4S	WCC	C-5S	WCC	:-7S	WCC-8S	
Parameter	IN	OUT	IN	OUT	IN	OUT	IN	OUT
Rc	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
Rw	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42
Dw	90	90	90	90	90	90	90	90
DTW	69.35	69.35	69.69	69.69	68.41	68.41	70.01	70.01
L = (Dw-DTW)*	20.65	20.65	20.31	20.31	21.59	21.59	19.99	19.99
D = (150-DTW)	80.65	80.65	80.31	80.31	81.59	81.59	79.99	79.99
H = (Dw-DTW)	20.65	20.65	20.31	20.31	21.59	21.59	19.99	19.99
A	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
В	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
L/Rw	49.17	49.17	48.36	48.36	51.40	51.40	47.60	47.60
Yo	0.87	1.5	0.65	2.05	0.84	1.5	0.94	1.5
Yt	0.28	0.33	0.16	0.61	0.38	0.7	0.62	1
t	20	20	. 11	10	20	20	20	20
Ln Re/Rw =	2.52584	2.52584	2.50616	2.50616	2.57881	2.57881	2.48737	2.48737
K (ft/sec) =	1.00E-04	1.34E-04	2.27E-04	2.16E-04	6.85E-05	6.58E-05	3.74E-05	3.65E-05
AVG K (ft/sec)	1.17E-04		2.22E-04		6.71E-05		3.69E-05	
AVG K (CM/SEC)	3.57E-03		6.76E-03		2.05E-03		1.13E-03	
AVG K (Gal/day/ft2)	7.56E+01		1.43E+02		4.34E+01		2.39E+01	

TABLE 1 (Continued)

	WCC-9S		WCC	WCC-10S		C-1D	WCC-3D	
Parameter	IN	OUT	IN	OUT	IN	OUT	IN	OUT
Rc	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
Rw	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42
Dw	90	90	90	90	140	140	140	140
DTW	67.17	67.17	69.51	69.51	70.09	70.09	70.62	70.62
$L = (Dw-DTW)^*$	22.83	22.83	20.49	20.49	20	20	20	20
D = (150-DTW)	82.83	82.83	80.49	80.49	79.91	79.91	79.38	79.38
H = (Dw-DTW)	22.83	22.83	20.49	20.49	69.91	69.91	69.38	69.38
A	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
В	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
L/Rw	54.36	54.36	48.79	48.79	47.62	47.62	47.62	47.62
Yo	0.91	1.9	0.96	1.5	2.25	2.4	1.68	1.7
Yt	0.16	0.21	0.56	0.83	0.39	0.52	1.23	1.36
t	71	77	20	20	117	117	60	60
Ln Re/Rw =	2.64567	2.64567	2.51661	2.51661	3.19028	3.19028	3.18702	3.18702
K (ft/sec) =	4.10E-05	4.79E-05	4.78E-05	5.25E-05	3.45E-05	3.01E-05	1.20E-05	8.56E-06
AVG K (ft/sec)	4.44E-05		5.02E-05		3.23E-05		1.03E-05	
AVG K (CM/SEC)	1.36E-03		1.53E-03		9.86E-04		3.13E-04	
AVG K (Gal/day/ft2)	2.87E+01		3.24E+01		2.09E+01		6.63E+00	

TABLE 2
SUMMARY OF AQUIFER HYDRAULICS TESTING

	- 2-			
Well No.	Slug Test ^a	Pump Test	Pump Test ^b Analysis Method	Coefficient of Storativity (S) (from pump test)
1\$		460	Cooper Jacob	0.014
2\$	NT	NM		
3S	NT	ND		
48	76	470	residual drawdown	
5S	140	NM		
6S	NT	970	Cooper Jacob	0.004
7S	43	970	Cooper Jacob	0.013
8S	24	560	Cooper Jacob	0.009
98	29	NR		
10\$	32	NM		
1D	NT	NR	••	
3D	6.6	NM		
1S, 6S, 7S, 8S		860	Distance drawdown (500 minutes)	0.007

a Slug test values included for reference, generally not directly comparable to pump test values.

b WCC-4S was pumping well.

NT Not tested.

NR Not responsive.

NM Not monitored.

TABLE 3

GROUND WATER ELEVATION DATA COLLECTED 18 OCTOBER 1989
DOUGLAS AIRCRAFT C6 FACILITY, TORRANCE, CALIFORNIA

Well No.	Elevation ¹ Top of Well ² (ft)	Depth to Ground Water From top of Well (ft)	Elevation of Ground Water (ft)
WCC-1S	50.70	70.18	-19.48
WCC-2S	50.59	69.65	-19.06
WCC-3S	51.19	70.61	-19.42
WCC-4S	49.69	69.28	-19.59
WCC-5S	48.22	67.92	-19.70
WCC-6S	50.95	70.65	-19.70
WCC-7S	48.29	68.36	-20.07
WCC-8S	50.56	69.91	-19.35
WCC-9S	47.01	67.08	-20.07
WCC-10S	51.12	69.54	-18.42
WCC-1D	50.45	69.96	-19.51
WCC-3D	51.18	70.56	-19.38

- 1 Reference: City of Los Angeles Benchmark CY-3028, datum is Mean Sea Level (MSL).
- 2 Top of well is top of well casing on north side marked with permanent ink.

TABLE 4
RESULTS OF SOIL ANALYSES AT DAC C6 FACILITY

Boring Number	Depth of Sample (feet)	Halogena (EPA Me	ated and Aromatic Volatile Organics thod 8010/8020, concentrations in ppm)
B-6	10	0.053 0.011 0.016 0.064 0.001 0.009	methylene chloride DCA TCE toluene ethylbenzene total xylenes
B-6	20	12 45 1,900 51 390	TCA TCE toluene ethylbenzene total xylene
B-6	30	48 21	toluene total xylenes
B-6	35	19 6	toluene total xylenes
B-6	40	59 23 320 2.9 21	TCA TCE toluene ethylbenzene total xylenes
B-6	50	0.06 0.09 0.53 0.035 0.31 0.03	1,1-dicholoroethylene DCA TCA TCE toluene total xylenes
B-6	60	7.7 9.9 2.9	TCA toluene total xylenes
B-7	30	0.15 0.09 1.7 0.09	TCA TCE toluene total xylenes
B-7	35	1	total xylenes
B-7	40	10 40 1	TCA toluene total xylenes

TABLE 4 (continued)

Boring Number	Depth of Sample (feet)	Halogenat (EPA Met	red and Aromatic Volatile Organics hod 8010/8020, concentrations in ppm)
B-7	40	12/10 25/40 <1	TCA toluene xylenes
B-7	50	57 880 4 41 1.7	1,1-dichloroethylene TCA 1,1,2-trichloroethane toluene total xylenes
B-7	60	20,000 600 59,000 140 450	methylene chloride 1,1-dichloroethylene TCA tetrachloroethylene toluene
B-8	45	0.27	toluene
B-8	50	0.04	toluene
B-8	60	0.04 0.44 1.0	DCA TCA toluene
B-8	65	0.05 25	TCA toluene
B-9	40	0.03 0.02 0.08 0.1	DCA TCA TCE toluene
B-9	50	0.02 0.11	TCE toluene
B-9	55	0.03 0.06	TCA toluene
WCC-6S	75	9.4 8.4 1.0 0.30	MEK MIBK Toluene Butyl Cellosolve

TABLE 4 (continued)

Boring Number	Depth (feet)	Haloger (EPA M	nated and Aromatic Volatile Organics lethod 8010/8020, concentrations in ppm)
WCC-6S	80	9.2 .24 2.50 2.20 .08 0.70	MEK DCE MIBK toluene TCE butyl cellosolve
WCC-6S	85	.550 .330 .150 .007	MEK MIBK toluene TCE

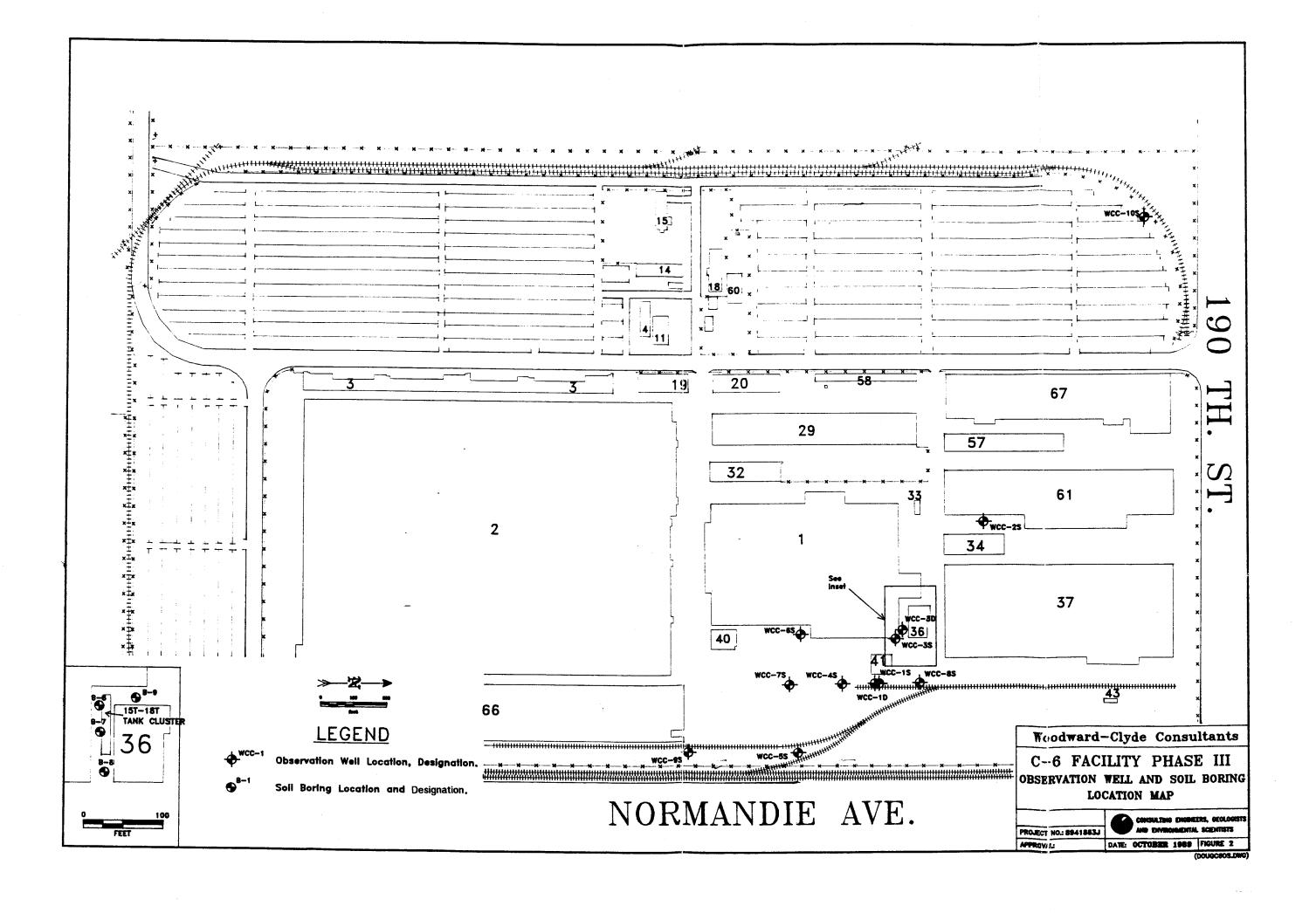
Borings 8 and 9 sampled on 6/14/89, Borings 6 and 7 sampled on 6/13/89.

MEK, 2-Butanone MIBK, 4-methyl-2-pentanone TCA, 1,1,1-trichloroethane TCE, trichloroethylene DCE, 1,1-dichloroethylene

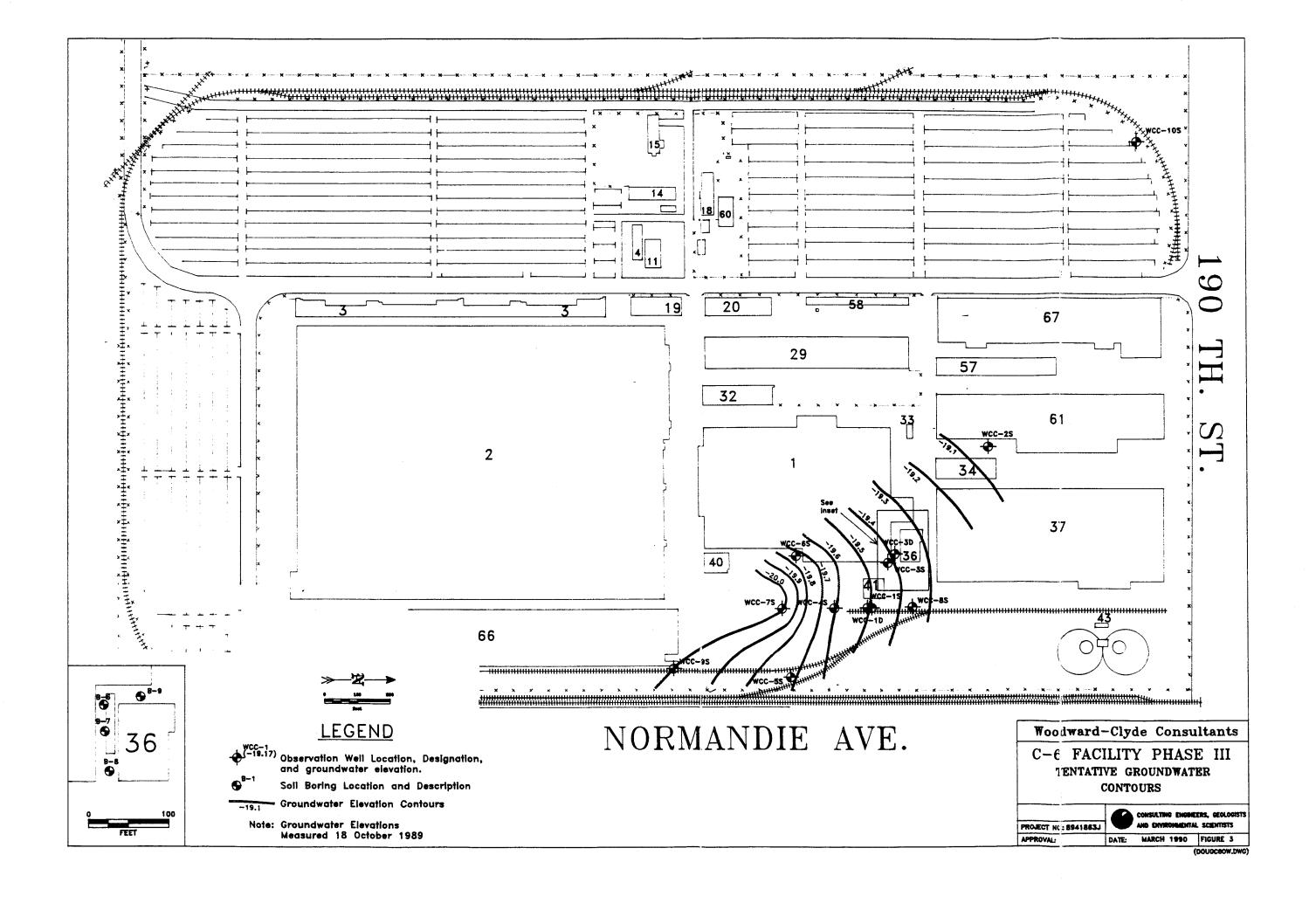
TABLE 5
GROUND WATER ANALYTICAL DATA AT DOUGLAS AIRCRAFT C6 FACILITY, TORRANCE, CALIFORNIA
(Concentration in ug/l)

			COMPOUND									
WELL I.D.	SAMPLE DATE	1,1-DCE	1,1-DCA	1,1,1-TCA	TCE	MIBK	trans-1,2-DCE	Chloroform	Toluene	Benzene	cis-1,2-DCE	
WCC-1S	03/27/87 04/13/87* 11/12/87 07/13/89 08/23/89	2,800 3,700/2,500 3,000 900 1,500	-/- 23 <20 <30	300 260/120 160 67 <30	4,600 5,500/3,600 5,200 2,400 2,800	/- /- <100 <100	 -/ 75 <20 <30	- -/- 39 <20 <30	/ / < 20 < 30	85 110/ 160 <20 <30	- - - <20 41	
WCC-2S	11/02/87 11/12/87 07/13/89 08/23/89	5 2 <1 <1	- <1 <1	5 <1 <1	14 4 5 3	 <5 <5	- - <1 <1	- <1 <1	6 1 <1 <1	- - <1 <1	- - <1 <1	
WCC-3S	11/02/87 11/12/87 07/13/89 08/23/89	38,000 88,000 18,000 56,000	1,000 <500 <1,000	110,000 54,000 56,000 78,000	10,000 11,000 7,700 6,000	54,000 70,000 <3,000 <5,000	1,000 660 <1,000	 <500 <1,000	80,000 140,000 32,000 56,000	 < 500 < 1,000	 < 500 < 1,000	
WCC-4S	11/02/87 11/12/87 07/13/89 08/23/89	360 1,200 170 360	 -3 <5	14 35 11 7	700 690 270 410	 <20 <30	2 <3 <5	2 - - - - - - - - - - - - - - - - - - -	 -3 <5	 <3 <5	 10 15	
WCC-5S	11/30/87 01/08/88 07/13/89* 08/23/89	7 4 3/3 <1	- <1/<1 <1	 <1/<1 <1	1 10 13/12 12	 <5/<5 <5	- - <1/<1 <1	- <1/<1 <1	1 - <1/<1 <1	- <1/<1 <1	 6/6 4	
WCC-6S	10/6/89	210	4	130	140	<5	7	<1	<1	<1	12	
WCC-7S	07/13/89 08/23/89	850 1,100	· <10 <30	110 66	1,300 1,400	<50 <100	11 <30	<10 <30	<10 <30	<10 <30	26 31	
WCC-8S	07/13/89 08/23/89	430 820	<5 <5	160 130	240 430	<30 <30	9 <5	<5 <5	<5 <5	<5 <5	7 7	
WCC-9S	10/6/89	<1	<1	<1	15	<5	<1	<1	<1	<1	7	
WCC-10S	07/13/89* 08/23/89	2/1 4	<1/<1 <1	<1/<1 <1	86/87 81	<5/<5 <5	<1/<1 <1	3/3 4	<1/<1 <1	<1/<1 <1	<1/<1 <1	
WCC-1D	07/25/89 08/23/89	<1 <1	<1 <1	<1 1	2 2	<5 <5	<1 <1	<1 <1	1 <1	<1 <1	1 <1	
WCC-3D	07/25/89 08/23/89	<1 <10	<1 <10	49 32	4 <10	<5 <50	<1 <10	<1 <10	3 <10	<1 <10	11 <10	

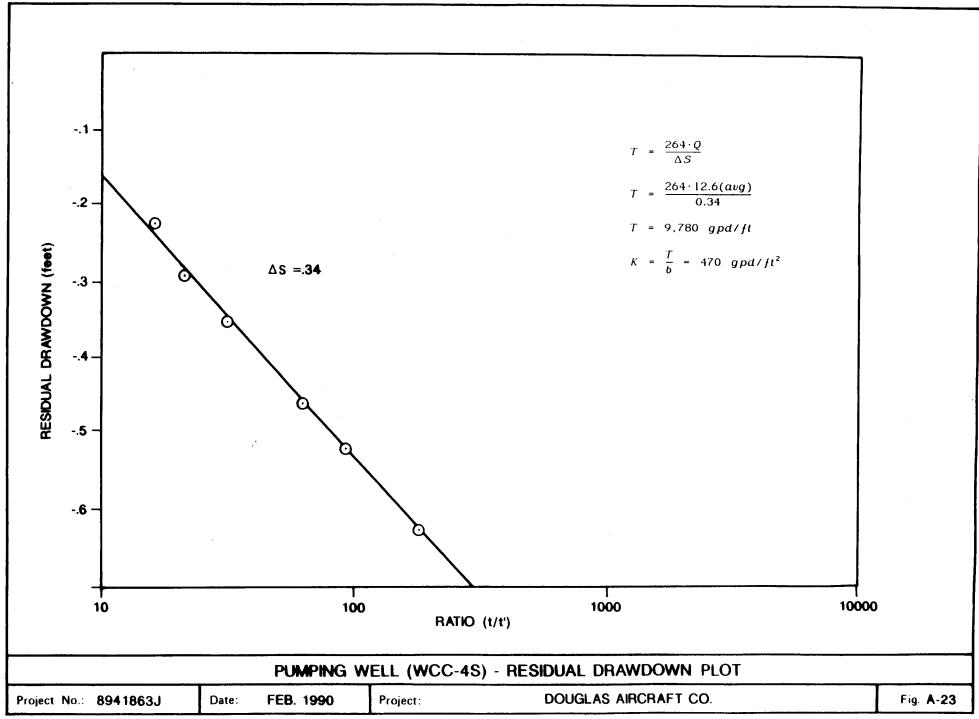
^{*} Duplicate sample also analyzed -- Not Detected (Detection limit not specified)



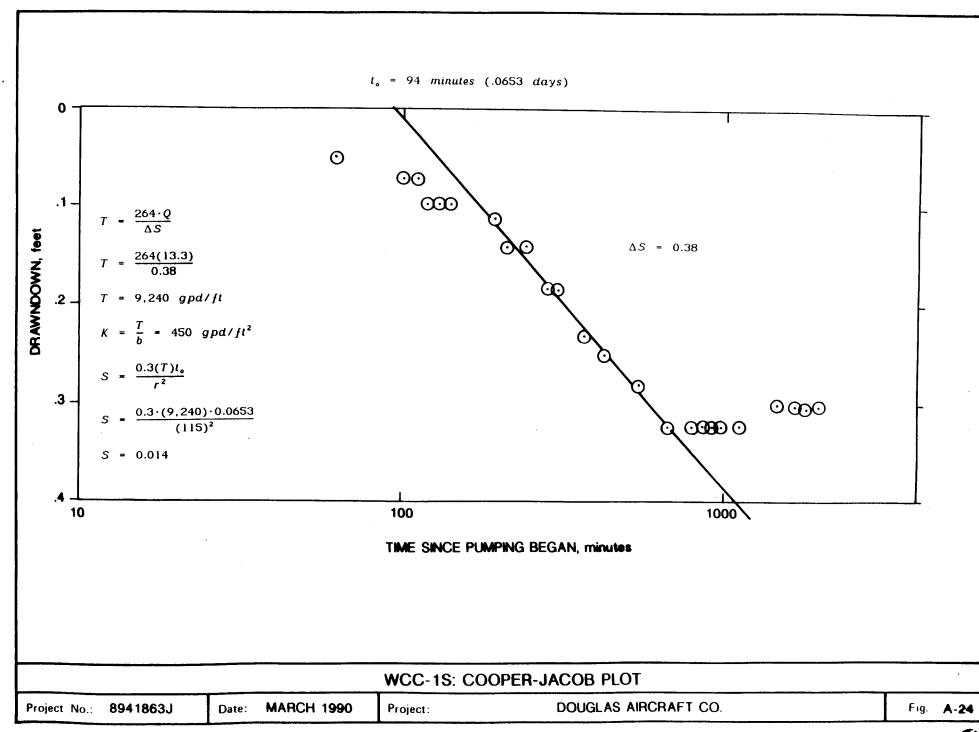
BOE-C6-0221933



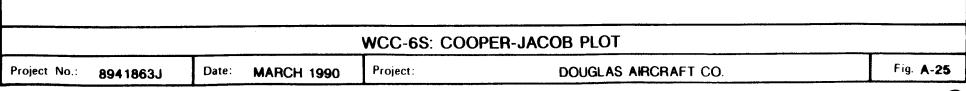
BOE-C6-0221934

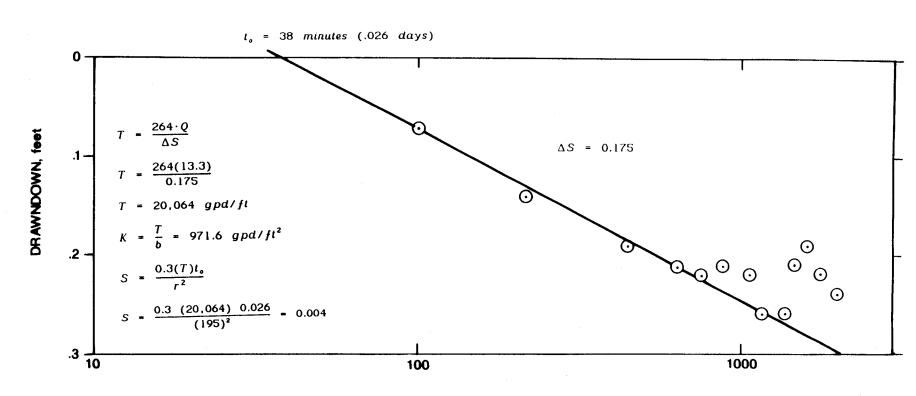


BOE-C6-0221936

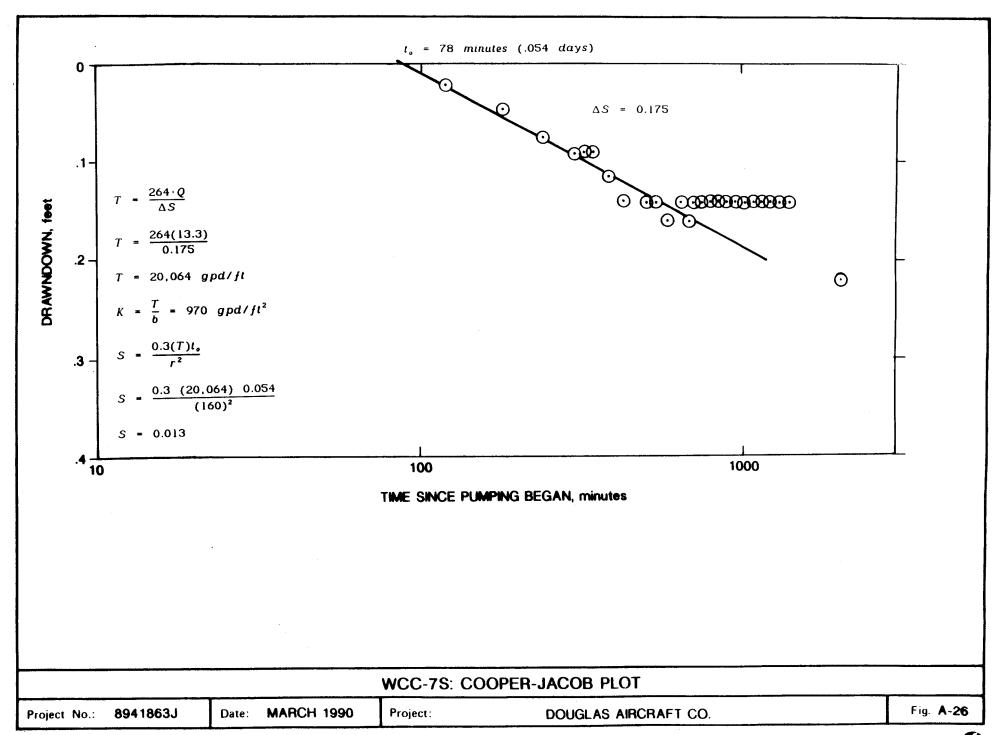


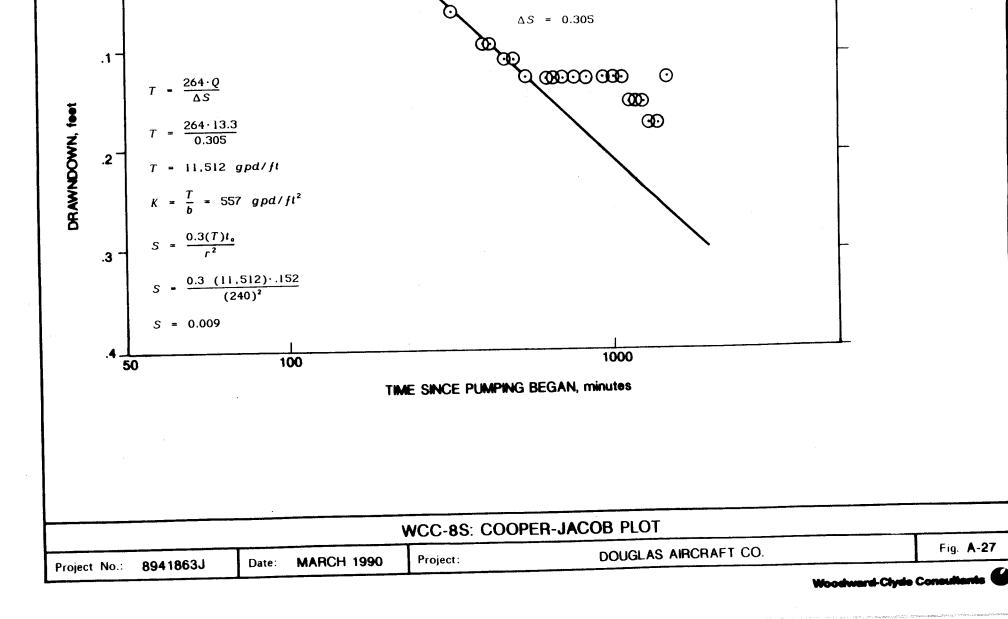






TIME SINCE PUMPING BEGAN, minutes





 $t_o = 220$ minutes (.152 days)

BOE-C6-0221940

TABLE A-1
WELL DEVELOPMENT SUMMARY
DOUGLAS AIRCRAFT C6 FACILITY

Well No.	Sand Bailer and Surge Block Time (min)	Sand Bailer Volume Removed (gallons)	Pumping "ime (min)	Pumping Volume Removed (gallons)	Total Removed (gal)	Comments
WCC-6S	15	45	75	400	445	Water became completely clear.
WCC-7s	60	100	70	500	600	Water became completely clear.
WCC-8S	55	70	90	430	500	Water became completely clear.
wcc-9s	15	60	70	310	370	Water became completely clear.
wcc-10s	95	190	45	370	560	Water became completely clear.
WCC-1D	15	40	540	1,170	1,210	Well was damaged by bailing on 7 July 1989. Well was repaired on 20 July 1989. Well was developed by pumping only, following repair.
WCC-3D	320	500			500	Water became slightly cloudy. Well was only pumped just before sampling, see Table A-2.

TABLE A-2
WATER SAMPLING DATA
DOUGLAS AIRCRAFT C6 FACILITY

Well No.	Sample Date	Sample Interval (gal)	Electrical Conductivity EC (µmhos)	Total Dissolved Solids TDS (ppm)	рĦ	Temperature F°
WCC-1S	7/12/89	1 4 6 8 10		490 560 540 580 540	9.0 7.2 7.2 7.2 7.2 7.2	74.5 74.7 74.3 74.7 74.3
	8/23/89	2 4 6 8 10	1220 1320 1340 1330 1330		7.3 7.3 7.3 7.3 7.3	71.1 71.0 71.0 70.6 70.6
WCC-2S	7/11/89	15 25 35 40		310 320 320 320	7.3 7.2 7.2 7.2	72.1 72.0 72.0 71.6
	8/22/89	10 20 30 40	760 760 760 760		7.2 7.3 7.3 7.3	70.4 70.4 70.2 70.2
WCC-3S	7/12/ 89 ,	10 20 30 40		550 550 560 560	6.8 6.7 6.7 6.7	73.9 73.4 73.4 73.4
	8/23/89	10 20 30 40	1270 1270 1280 1280		6.8 6.8 6.9 6.9	70.5 69.9 70.2 70.2
WCC-4S	7/11/89	15 25 35 45		430 440 420 450	7.2 7.2 7.2 7.2	72.7 72.9 72.9 73.0
	8/23/89	10 20 30 40	960 990 1000 1005		7.2 7.2 7.2 7.2	69.8 69.8 69.2 69.4
WCC-5S	7/11/89	15 25 35 45		380 370 390 390	7.3 7.3 7.3 7.3	73.4 72.0 72.1 72.3
	8/22/89	15 25 35 45	885 900 900 900		7.2 7.3 7.3 7.3	69.1 69.1 69.2 69.4
WCC-6S	10/6/89	10 20 30 40	1,180 1,190 1,190 1,190		7.0 7.1 7.1 7.1	69.7 69.7 69.8 69.8

TABLE A-2 (continued)

Well No.	Sample Date	Sample Interval (gal)	Electrical Conductivity EC (µmhos)	Total Dissolved Solids TDS (ppm)	рН	Temperature F°
WCC-7S	7/11/89	15 25 35 45		540 520 510 510	7.2 7.1 7.2 7.2	72.5 72.5 72.7 72.5
	8/23/89	10 20 30 40	1180 1225 1220 1200		7.1 7.1 7.2 7.2	68.8 69.0 68.8 69.5
wcc-8s	7/11/89	15 25 35 45		390 390 380 380	7.3 7.2 7.2 7.2	72.5 72.7 72.5 72.7
	8/23/89	10 20 30 40	880 865 865 875		7.2 7.2 7.2 7.3	69.9 69.6 69.6 69.6
wcc-9s	10/6/89	15 25 35 45	1,110 1,070 1,050 1,000		7.1 7.2 7.2 7.2	69.1 69.2 69.0 69.1
WCC-10S	7/11/89	1 10 25 35 40 45		420 450 420 410 410 420	7.2 7.3 7.3 7.3 7.2	70.9 70.3 70.3 70.7 70.5 70.5
	8/22/89	10 20 30 40	1000 1010 1040 1040		7.2 7.2 7.3 7.3	69.1 69.1 68.9 68.8
WCC-1D	7/24/89	15 75 175 275 350	760 720 770 770 770 770		7.2 7.3 7.4 7.5 7.5	70.6 71.0 71.3 71.1 71.1
	8/21/89	20 40 60 80 100 120	760 756 730 730 730 720 720 720		7.4 7.4 7.5 7.4 7.4 7.4	70.1 69.6 69.7 69.2 69.7 69.8 69.8
WCC-3D	7/25/89	10 50 100 200 300 400 500	770 760 780 760 750 750 750		7.4 7.2 7.4 7.6 7.4 7.6 7.8	69.6 70.2 70.3 70.4 71.9 70.2 70.8
	8/21/89	20 40 60 80 100 120 140	710 715 715 720 720 715 715		7.3 7.4 7.4 7.4 7.4 7.4	69.5 69.2 69.3 69.0 69.3 69.8 69.1

TABLE A-3
SUMMARY OF WELL CONSTRUCTION DETAILS

Well No.	Distance from WCC-4S* (feet)	Depth of Well (feet)	Screened Interval (feet)	Screen Slot Size (inches)	Diameter of Well Casing (inches)	Diameter of Filter Pack (inches)	Filter Pack Material
WCC-1S	115	88.5	78.5-88.5	0.01	2	10	No. 12 Silica sand
WCC-2S	675	90.5	70.5-90.5	0.01	4	10	No. 0/30 Lonestar sand
WCC-3S	220	89	69-89	0.01	4	10	No. 0/30 Lonestar sand
WCC-4S (pumping well)		90.5	70.5-90.5	0.01	4	10	No. 0/30 Lonestar sand
WCC-5S	250	91	61-91	0.01	4	10	No. 0/30 Lonestar sand
WCC-6S	200	91	60-90	0.01	4	11	No. 0/30 Monterey sand
WCC-7S	160	90	59.5-89.5	0.01	4	10	No. 0/30 Lonestar sand
WCC-8S	240	89.5	60-90	0.01	4	10	No. 0/30 Lonestar sand
WCC-9S	525	90	120-140	0.01	4	10	No. 0/30 Monterey sand
WCC-10S	2,020	90	60-90	0.01	4	10	No. 0/30 Lonestar sand
WCC-1D	100	140	120-140	0.01	4	10	No. 0/30 Lonestar sand
WCC-3D	250	140	120-140	0.01	4	10	No. 0/30 Lonestar sand

Measured from well locations plotted on site map provided by DAC.

APPENDIX A

FIELD PROCEDURES
AND
AQUIFER TESTING DATA ANALYSIS

APPENDIX A

FIELD PROCEDURES AND AQUIFER TESTING DATA ANALYSIS

A.1 GENERAL INFORMATION

Drilling was performed by two companies: A&R Drilling, Inc. of Carson; and Beylik Drilling, Inc. of La Habra California. Drilling began on 5 June 1989 and was completed on 30 June 1989. Soil sample borings and shallow observation well borings were drilled using a CME-75 drill rig equipped with 6-1/2 inch O.D. hollow stem augers for soil sampling and 11-inch O.D. hollow stem augers for well installation. The deep observation well borings were completed by mud rotary drilling using an Ingersoll-Rand drill rig equipped with a 10-inch tri-cone drill bit.

A.1.1 Shallow Observation Well Installation

Observation Wells WCC-7S, 8S, and 10S were constructed of threaded 4-inch diameter, Schedule 40 PVC casing and screen 90 feet. a depth of approximately set to observation wells were installed by first drilling sampling borehole with the 6-1/2-inch outside diameter In general, soil samples were (O.D.) hollow stem augers. collected at near-surface, 5 feet and then at approximately 5 foot intervals. Next, these augers were removed from the boring and the 11-inch O.D. hollow stem augers with a wooden plug placed in the bottom were used to ream out the boring Upon reaching total depth to its total depth of 90 feet. the inside of the augers were quickly filled with tap water and the wooden plug was knocked out of the bottom auger. The water was used to form hydrostatic pressure in the augers to help hold out the surging sands which would otherwise fill up the inside of the bottom augers and prevent a proper well installation. After knocking out the wooden plug, the 4-inch diameter wells were installed by inserting the casing into the hollow stem auger and allowing the well casing to rest on the bottom of the boring. Filter pack material (Lone Star No. 0/30) was poured from the surface into the annulus between the casing and hollow stem auger. As filter pack material was introduced into the borehole, the hollow stem augers were slowly withdrawn from the hole to allow the filter pack to fall in place between the well casing and native soil. The same procedure was followed in placing the bentonite plug and the volclay grout backfilling.

A.1.2 Deep Observation Well Installation

Observation Wells WCC-1D and WCC-3D were also constructed of threaded 4-inch diameter, Schedule 40 PVC casing and screen and set to a depth of approximately 140 feet. The wells were installed by first completing a sampling borehole using a wire line coring system which was used to attempt continuous coring from 120 to 140 feet. This sampling system worked satisfactorily on WCC-3D, but had little success in WCC-1D. After completing the sampling borehole, the geologic formation was electrically logged (E-logged) by Geo-Hydro-Data, Inc. of Tehachapi, California. Next, the boring was reamed out to the total depth with a 10-inch diameter drill bit.

Once the boring was completed for the casing installation, the drilling mud was thinned to help break down the mud cake formed on the sidewalls of the boring. In both WCC-1D and WCC-3D the mud was thinned too much on the first attempt, and the boring sidewalls caved in and had to be redrilled. The well casing was placed down the 10-inch boring with centralizers installed at five locations along its length to keep it centered in the boring and not laying against the sidewalls. Filter pack sand was placed outside the screened interval of the casing using 1-1/2 inch diameter tremie pipe

and washing it down with tap water. A bentonite plug was set in the boring on top of the filter pack by pouring 1/4-inch bentonite pellets directly into the boring.

After allowing the bentonite pellets to settle into place the remainder of the annulus was backfilled by tremie pipe with volclay grout up to 8 feet below the surface. The top 8 feet of the annulus was backfilled with concrete.

A.1.3 Well Construction

The observation wells were constructed of 4-inch O.D. Schedule 40 PVC flush-threaded blank pipe, and screened with 0.010-inch slotted PVC screen. Adhesives were not used. The shallow wells were installed with 70 feet of blank casing and 30 feet of screen. The deep wells were installed with 120 feet of blank casing and 20 feet of screen. The well screen was filter packed by pouring or treming the filter material into the borehole from the surface. A filter pack material of Lone Star No. 0/30 sand was selected based on a field sieve analysis. Filter pack analysis and design procedures are discussed in Section C.4. The filter pack was placed from the well bottom to about 5 feet above the top of the well screen.

An approximately 5-foot thick bentonite pellet plug was placed on top of the filter pack, to minimize movement of fluids through the annular space. In addition, volclay bentonite grout was placed in the annulus from the top of the bentonite plug to approximately 8 feet below ground surface. A concrete plug was placed from the top of the volclay to the surface, to minimize seepage of surface fluids into the well and to provide strength to the backfill. The top of the well casings were completed 3 to 6 inches below grade with a waterproof locking well cap and protected with a moisture resistant steel traffic-rated

Christy box. Figure A.O is a schematic of the general observation well design. Appendix D presents the boring logs and graphic well construction details.

A.1.4 Soil Borings

Four soil borings, B-6 through B-9, to collect soil samples for chemical analysis and lithologic logging, were completed in the vicinity of the underground tank cluster, 15T through 18T. Each boring was completed to a depth of 65 feet.

Soil sampling as described in Section A.2 was completed in each boring just below the surface, and at 5-foot intervals to the total depth of each boring.

A.1.5 Soil Boring Backfill

Soil borings B-6 through B-9 were backfilled with silica sand and bentonite powder, at a ratio of 4 to 1. The top 1 to 2 feet of the borings were backfilled with asphalt.

A.2 SOIL SAMPLING

Soil samples were collected at 5-foot intervals in the soil borings and the shallow well borings to make observations regarding subsurface stratigraphic conditions and the presence of contamination, to perform field headspace tests, and to conduct laboratory analyses. Soil samples were collected using a modified California sampler that contained four brass tubes. The brass tubes were filled by driving the sampler 18 inches into undisturbed soil with the drop hammer. The number of blows required to drive the sampler 12 inches was recorded on the boring log and used to evaluate the density or consistency of the soil.

Additional soil sampling was completed for logging purposes only in the deep well borings beginning at 120 foot depth

and continuing to 140 feet. This sampling was performed using a wire line coring system which had a 2-inch diameter by 5-foot long split barrel sampler.

A.2.1 OVA Headspace Measurements

In general, one brass tube from each sample was extruded and placed into a sealable plastic bag. The bag was sealed and after approximately 5 to 10 minutes, an organic vapor analyzer (OVA) probe was inserted into the bag, and the vapor concentration in the headspace was measured and recorded on the boring log.

A.2.2 Soil Sample Preparation

One to two tubes from the soil sampler were prepared for laboratory analysis. The ends of the tubes were covered with aluminum foil, plastic end caps, and sealed with electrical tape. Soil samples were labeled with the following information:

- o Project number
- o Project name
- o Boring number
- o Sample number
- o Soil depth
- o Date
- o Sampler's initials

The soil samples were then sealed in Ziploc plastic bags and placed on ice in an ice chest. All of the soil samples were delivered to West Coast Analytical Service, Inc. in Santa Fe Springs, California for analysis. Chain-of-custody procedures, including the use of sample identification

labels and chain-of-custody forms were used for tracking the collection and shipment of soil samples. Copies of the chain-of-custody forms are presented in Appendix C.

A.2.3 Drilling Residuals

Drill cuttings from the soil borings and the shallow well borings were placed in Department of Transportation (DOT) Class 17H 55-gallon drums, and the contents of the drums labeled using a permanent ink marker spray-painted inventory number corresponding to an inventory list compiled by the field engineer. The drums were sealed and stored inside the facility hazardous waste storage area. Drilling mud and soil cuttings produced during installation of the two deep observation wells were pumped into separate roll-off bins next to the wells. Douglas Aircraft was advised of the locations and contents of the drums, and the need for proper management of the drill cuttings.

A.3 FIELD OBSERVATIONS

Observations by Woodward-Clyde Consultants' personnel during the drilling, sampling, and well installation operations were recorded on boring logs, as presented in Appendix B. These observations related to visual soil classifications, geologic and stratigraphic sample descriptions, observation well construction details, sampling efforts, OVA measurements, and other pertinent information.

A.4 FILTER PACK ANALYSIS

The selection of the proper filter pack material and well screen slot size is essential in collecting a sediment-free or low sediment content water sample. In all observation wells, soil samples were collected for sieve analysis. Filter pack design calculations were made based on the grain size distribution of these finest grained soil samples

collected within the designed screen interval and below the ground water table. For observation Wells WCC-1D, 3D, 7S, 8S, and 10S the depths of the samples analyzed were 123, 122, 75, 75, and 80 feet, respectively.

Soil sieve analyses for selection of well screen slot and filter pack size were conducted in the field. Each soil sample was heated with a portable propane stove to evaporate water from the soil. When the sample was dry, it was weighed on a scale to the nearest gram. The soil sample was then poured into the top of an eight sieve stack and shaken for approximately 5 minutes. The sieve sizes used in the analysis are shown in Figure A-1. The soil retained in each sieve was weighed and the cumulative percent retained was calculated for each sieve. The gradation analyses for the wells are illustrated in Figures A-1 through A-5.

A well design using a Lonestar No. 30 sand filter pack and a screen slot width of 0.01 inches (10 slot) was used for the five wells based on the gradation analyses. gradation of filter pack and screen slot width are plotted on Figures A-1 through A-5 along with the actual material These ideal sizes were calculated using the sizes used. well design formulas presented in "Ground Water and Wells" by Driscoll, 1986." A commercially blended filter pack material was then selected that best matched the calculated filter pack curve, since custom made filter pack materials were not readily available. The grain size analysis curves for Wells -1D, -3D, -7S, -8S, and -10S were similar, and the soils were classified as silty sands to sandy silts. lithologic classification also correlated with the field descriptions of WCC--1D, -3D, -1S, -2S, -3S, and -4S.

A.5 WELL DEVELOPMENT

Observation Wells WCC-7S, -8S, -10S, -1D, and -3D were developed by Howard Pumps, Inc. of Barstow, California. Development occurred on 5 through 7 July 1989. During this development WCC-1D was damaged by breaking the bottom plug out of the well while bailing. Due to the formation conditions, sand surged up about 8 feet into the casing. This damage was repaired on 20 July 1989 by filling the well casing with drilling mud and then bailing the sand out of the bottom. Then a 2-foot plug of bentonite clay was set in the bottom of the well by pouring dehydrated bentonite pellets down the well and allowing them to hydrate. Once the pellets had hydrated, and formed a new bottom plug, the well was redeveloped.

All of the wells were developed, first by bailing and surging, to remove the maximum amount of sediment possible. Next the wells were pumped by submersible pump to remove a large volume of water and assure the ground water around the well was formation water which had not been affected by the well installation. The two deep observation wells, WCC-1D and -3D, required a greater effort in their development because they were installed using mud rotary drilling. Table A-1 the development times, and the ground water volumes removed during development are presented. The water removed from each well was observed to become clearer during development and was completely clear upon completion of development. Water removed from the wells development was stored in one large, steel, temporary "Baker" storage tank on site near Building No. 41, prior to treatment and discharge.

A.6 GROUND WATER SAMPLING

Two rounds of ground water sampling were completed from all ten of the observation wells. On 11, 12, 24, and 25 July 1989 the first round of sampling occurred (the two deep observation wells were sampled on the later two dates due to the damage of WCC-1D), and on 21 through 23 August 1989 the second round of sampling was completed.

Prior to beginning sampling procedures the static ground water level was measured in each well to the nearest one hundredth of a foot using an electronic well sounder. Then each well was purged, to remove possible stagnant water, by evacuating a minimum of three casing volumes of ground water. This was accomplished by bailing the well with a 3-1/2-inch-diamter PVC bailer attached to new polypropylene rope. The exception to this was the purging of WCA-1D and -3D on the first round of sampling only. These wells were purged by setting a submersible pump in the well and pumping a large volume of water for a final effort in development.

Throughout purging, and just prior to sampling the wells, pH, electrical conductivity or total dissolved solids, and temperature were measured and recorded for the evacuated ground water (Table A-2). These measurements were made to confirm that the wells were purged sufficiently. Sampling was done with a 1-1/2-inch-diameter Teflon bailer suspended from a monofilament line. Water samples were collected from each well in two 40 ml VOA vials.

In addition to water samples, bailer rinse samples were also collected in two 40 ml VOA vials for each well prior to collecting the water samples. The rinse samples were collected for possible analysis to confirm the sampling equipment was satisfactorily decontaminated.

The water samples, rinse samples, and two 40 ml VOA trip blanks for each sampling round, were packed on ice in a portable chest immediately after collection. Samples were delivered on the day following collection to West Coast Analytical Services. Chain-of-custody procedures, including the use of sample identification labels and chain-of-custody form, were used for tracking the collection and delivery of the samples. The chain-of-custody form is presented in Appendix C.

A.7 EQUIPMENT DECONTAMINATION PROCEDURES

Soil and ground water sampling equipment was decontaminated between sampling events using the following procedure:

- Brush-assisted water rinse to remove soil and mud (soil sampling only)
- 2. Water wash with Liquinox
- 3. Deionized water rinse to remove Liquinox
- 4. Second rinse with deionized water
- 5. Dry with paper towels (soil sampling only).

Prior to use at the site, the brass tubes used in the modified California sampler were cleaned in WCC's laboratory by washing sequentially in dilute sulfuric acid, Liquinox and water, and deionized water. The tubes were then air dried, and stored in sealable plastic bags prior to use at the site. New end caps were carried to the site in sealable plastic bags.

Drill augers or pipes, pumps, bailers, surge blocks, and cables were all steam cleaned prior to working on each boring or well. Steam cleaning was performed by the drilling companies on the facilities steam cleaning pad.

A.8 SLUG TESTING

Slug tests were conducted on observation Wells WCC-4S, -5S, -7S, -8S, -9S, -10S, -1D, and -3D on 19 July, 30 August, and 4 October 1989. Slug testing is a relatively quick and cost-effective method of measuring actual field hydraulic conductivity (K) values. Slug test derived hydraulic conductivity (K) values are not as accurate as aquifer pump test derived values, however, they are useful in preliminary calculations and in identifying large anomalies in hydraulic conductivity (K) values.

Slug tests only measure the average horizontal hydraulic conductivity (K) in the immediate vicinity of the well. In comparison a pump test stresses the aquifer at a greater radial distance, and as a result, a more representative hydraulic conductivity value (K) is obtained.

The slug tests were performed using the following equipment:

- O DL-120-MCP Envirolabs data logger with a 25 psi pressure transducer
- o One 3.25-inch diameter x 39-inch-long sand weighted mandrel with a 1.4 gallon volume
- o Steel tripod and polyethylene rope

The weighted mandrel was used with the tripod and rope to simulate a slug of water being inserted and withdrawn from the well. The pressure transducer and data logger recorded the subsequent drawdown and recovery water level measurements of the well. One cycle of drawdown and recovery was performed on each observation well.

Data from the slug tests were evaluated using the Bouwer-Rice method (June 1976) for calculating hydraulic conductivity (K). Bouwer and Rice developed a procedure

that considers the effects from partially penetrating wells, the radius of the gravel pack, and the effective radius of influence of the test.

The Bouwer and Rice method entails solving the following equation:

$$K = \frac{r_c^2 \ln(R_e/R_w)}{2Lt} \ln(Y_o/Y_t)$$

Where:

K = hydraulic conductivity

 r_{a} = radius of well casing

 R_a = effective radius of influence

 $_{\Gamma_{,u}}$ = radius of the well boring

L = length of screened interval or saturated thickness
if entire screen is not saturated

t = arbitrarily selected time from drawdown/time
 semi-log plot

y_o = initial drawdown at time t = 0, from drawdown/ time
 semi-log plot

The term R_{\bullet}/r_{w} , which is a function of the radius over which the drawdown in the well is dissipated, was solved using the following equation:

$$\ln(R_e/r_w) = \left[\frac{1.1}{\ln(H/r_w)} + \frac{A + B \ln[(D-H)/r_w]}{L/r_w}\right]^{-1}$$

Where:

- = length of screen (or saturated thickness if entire screen is not saturated)
- D = thickness of aquifer
- $A = \text{constant based on value of } L/r_w$ (see Figure A-22)
- B = constant based on value of L/r_w (see Figure A-22)

The test data were plotted on a semi-log diagram of drawdown (Y_t) versus time (t), drawdown being logarithmic (see Figures A-6 through A-21). The data should generate a straight line, although a flat "tail" is frequently observed. A drawdown (Y_t) is recorded for a selected time (t) within the straight line segment of the plot. Y_t and t are used in solving the equation for K.

The Bouwer and Rice method makes the following assumptions:

- 1. The aquifer is of constant thickness.
- 2. The soil is homogeneous and isotropic.
- 3. Flow is horizontal in the aquifer.

These assumptions are judged to be generally reasonable, recognizing that variations in aquifer thickness and anisotropic conditions will have an influence on calculated results.

A.9 PUMP TEST

The pumping well, WCC-4S, was selected because it is centrally located to the surrounding observation wells. In addition information collected during slug testing indicated the well would have a relatively high yield. Wells WCC-1S, -4S, -6S, -7S, -8S, -9S, and -1D served as observation wells.

Details of the well design for the existing ten shallow observation wells and the two deep observation wells are summarized in Table A-3. Depth of groundwater and distance to the pumping well is also included. Figure 2 shows the locations of the wells.

A 1-1/2 horsepower submersible pump was used to pump water from WCC-4S. The pump was switched on at 12:00 p.m. on 20 December 1989 and allowed to pump at 13.3 gpm for 16 hours and 30 minutes. At this rate the water level was nearly stable at a drawdown of approximately 6 feet.

The evacuated groundwater was stored in two 21,000-gallon transportable steel storage tanks. Storage requirements were estimated based on well development activities which indicated a maximum pumping rate of 4 to 5 gallons per Assuming a pumping rate of up to 10 gallons per minute, Woodward-Clyde initially ordered one storage tank and figured if and when a second storage tank was required, it would be more than 24 hours after the pumping began. Because the pumping rate was greater than 10 gpm the second storage tank would have been needed before the tank rental company could respond to our request, if the 13.3 gpm pumping rate was sustained. Therefore, the flow rate was reduced to 8.5 gpm for 4-1/2 hours. After the second tank was delivered to the site, the flow rate of 13.3 was resumed and maintained for the remainder of 30 total hours of "pumping". The overall time weighted pumping rate was

approximately 12.6 gal/min. The pump was switched off at 6:00 p.m. on 21 December 1989. Measurements in the pumping well and all the monitoring wells continued until WCC-4S had recovered 99 percent of its maximum drawdown, two hours after the pump was shut off.

Water was pumped to the surface and approximately 400 feet horizontally to the storage tanks. The volume of water pumped out of WCC-4S was measured by an in-line totalizer. A total of approximately 28,000 gallons of groundwater was evacuated.

Five of the monitoring wells WCC-4S, -1S, -7S, -8S, and -1D had pressure transducers installed and connected to one of three Terra 8 data loggers to automatically measure and to groundwater. In depth addition, Woodward-Clyde measured the depth to groundwater on regular intervals in all of the observation wells except WCC-1S, -4S, and -1D. This task was performed using a Solonist electric well sounder. In addition barometric pressure readings were collected at regular intervals throughout the pump test using a Swift, Model 477 barometer.

The data from each well showing a discernable reaction were analyzed using one or more of the following techniques: Cooper-Jacob Recovery (Residual Drawdown) plot, Distance/Drawdown plot. Time-Drawdown plot, and/or Α summary of the results is previously presented in Table 2. Slug test values obtained earlier are included reference.

The nearly instantaneous initial drawdown and the subsequent constant drawdown with time, precluded any valid analyses of the pumping stage drawdown in the pumping well WCC-4S.

Nevertheless the recovery data for the pumping well which did appear valid was analyzed using a residual drawdown plotting technique.

This technique utilizes a semi-log plot of the residual drawdown (in feet) vs. the ratio of t/t' (see Figure A-23) where:

t = time since pumping started

t' = time since pumping stopped

The differential change in water level (Δs) is thus obtained from the plot and used in the equation:

$$K = \frac{264Q}{\Delta s \cdot b} \tag{1}$$

where:

K = Hydraulic conductivity in gpd/ft²

Q = Pumping rate, in gpm

 Δ_S = Differential change in water level during one log cycle of time, in feet

b = The aquifer thickness (20.65 feet at WCC-4S)

Data for the observation wells WCC-1S, -6S, -7S, and -8S were analyzed using the Cooper-Jacob Time-Drawdown technique as shown on Figures A-24 to A-27. A calculation of μ (from the well function, Driscoll 1986) showed the technique would be appropriate in general. A Distance/Drawdown plot shows the change in drawdown as a function of distance from the pumping well. The equations used and the calculations are shown with the plot. Analytical methods used are discussed

in the literature (Driscoll, 1986; Walton, 1987). The fundamental equation for hydraulic conductivity is identical to Equation (1) above. Other equations include:

$$T = Kb \tag{2}$$

and

$$S = \frac{0.3Tt_o}{r^2} \tag{3}$$

where:

T = Coefficient of transmissivity, in gpd/ft

 $K = \text{Hydraulic conductivity in gpd/ft}^2 \text{ (Equation [1])}$

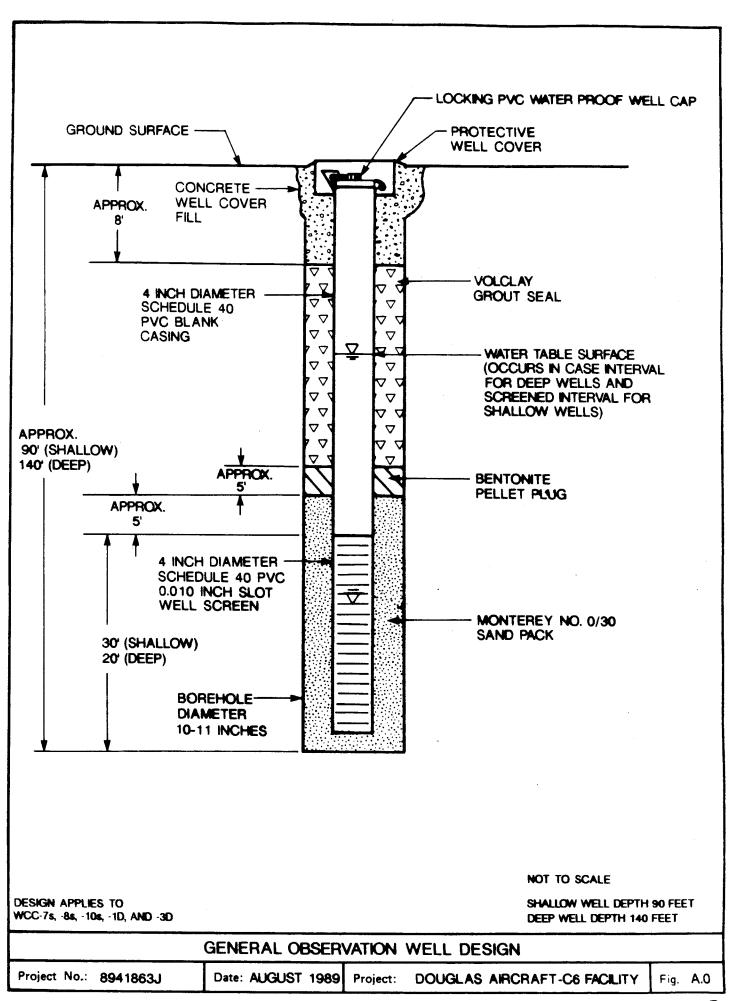
b = Saturated thickness of the aquifer tested in feet

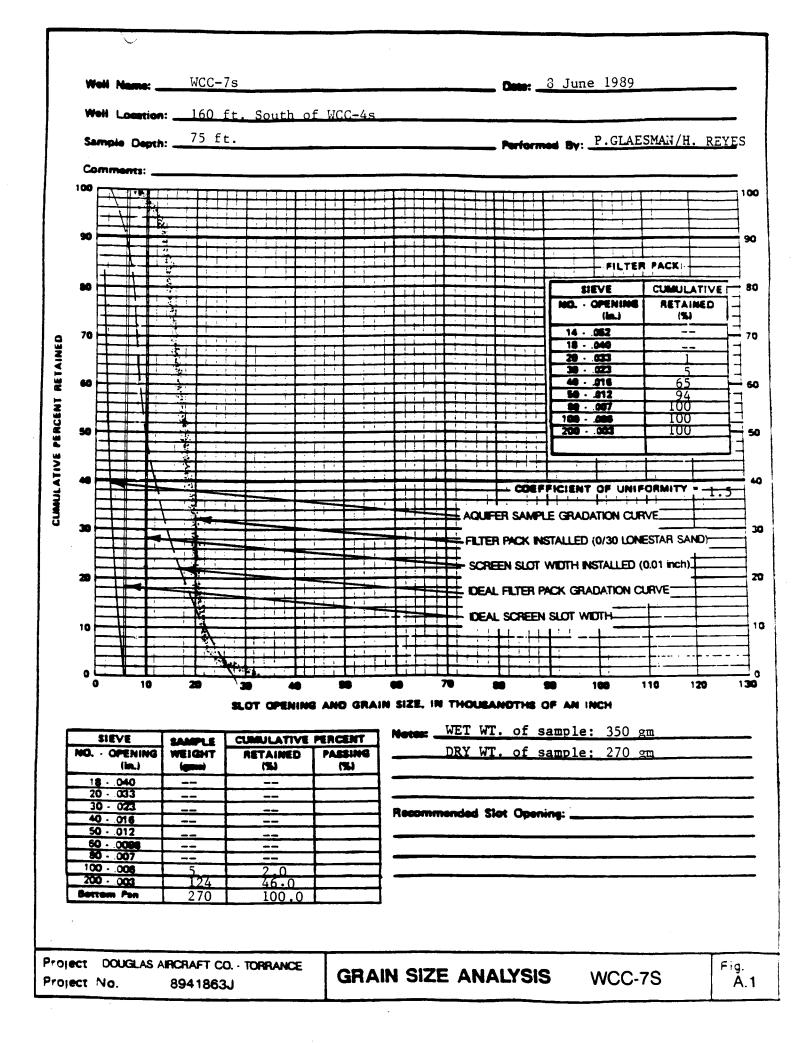
S = Storage coefficient (dimensionless)

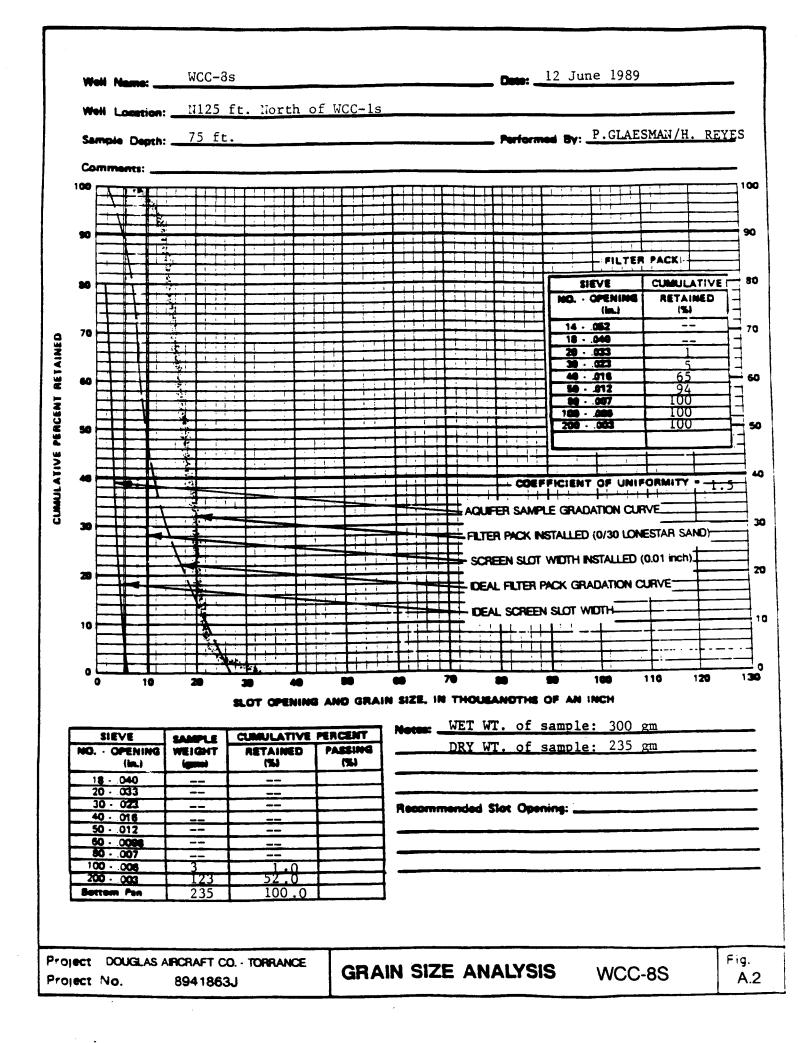
 t_o = Time, in days, of the intercept of the extrapolated drawdown curve at zero drawdown

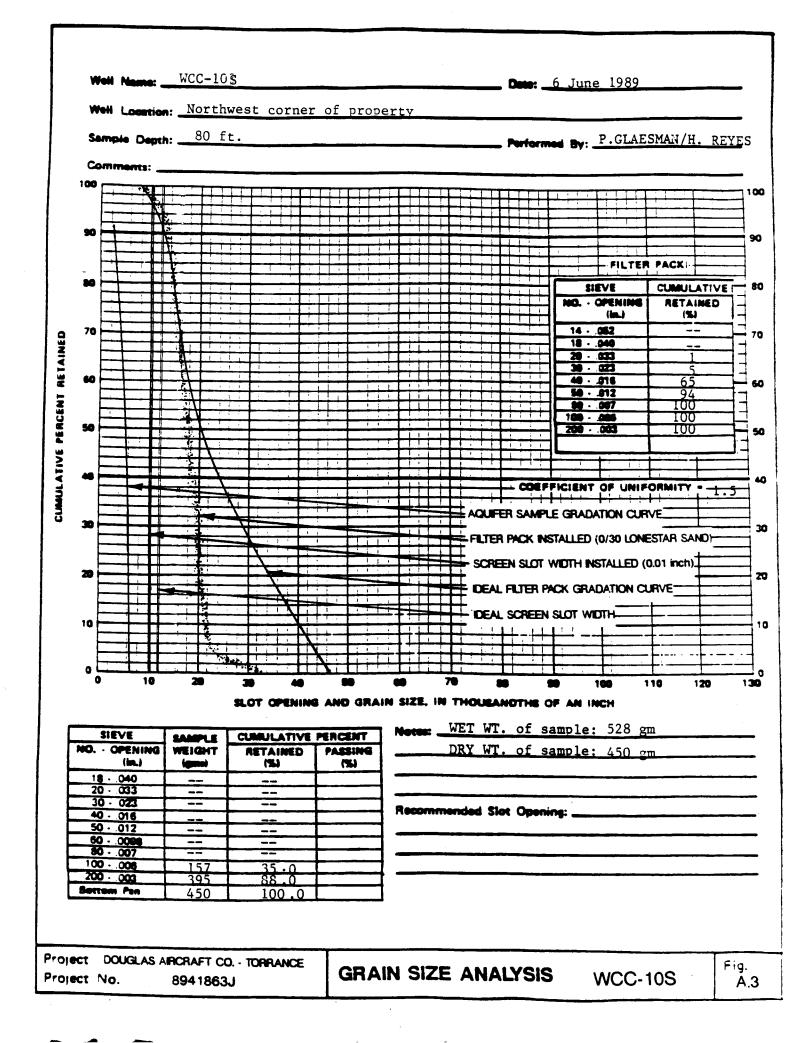
p = Distance, in feet, from pumped well to the
observation well where drawdown measurements were
made

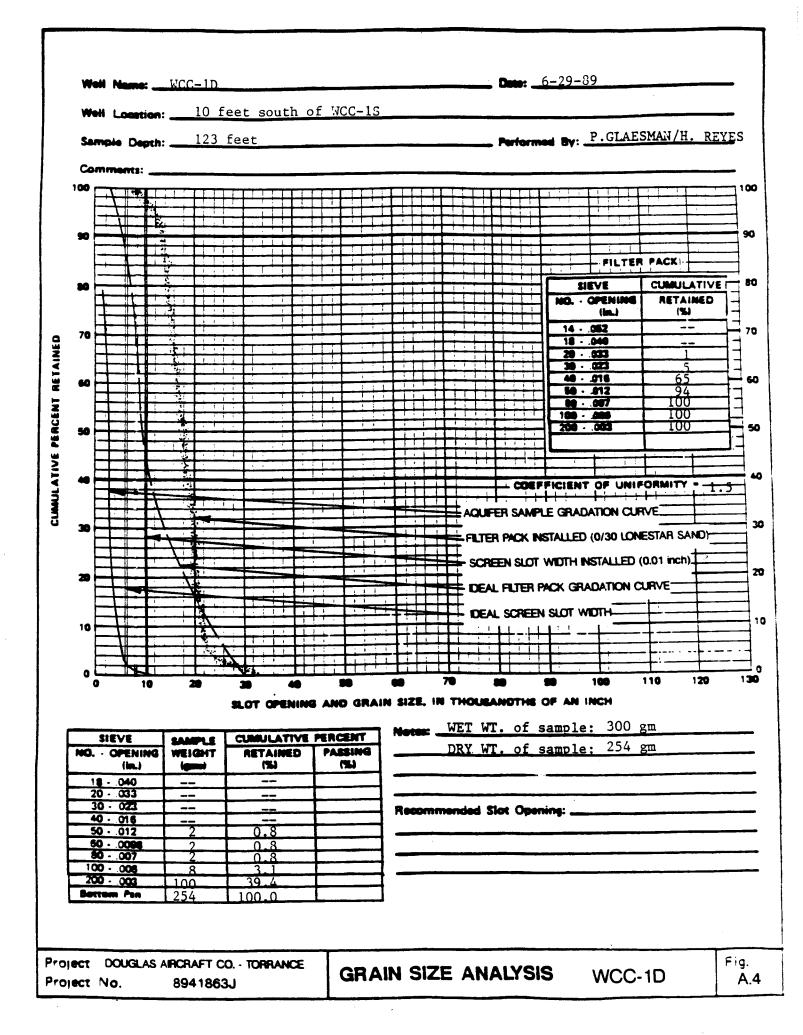
These plots allowed the calculation of both hydraulic conductivity, and storage coefficient according to Equations (1) and (3). The method of plotting and the calculation are shown on Figure A-28.

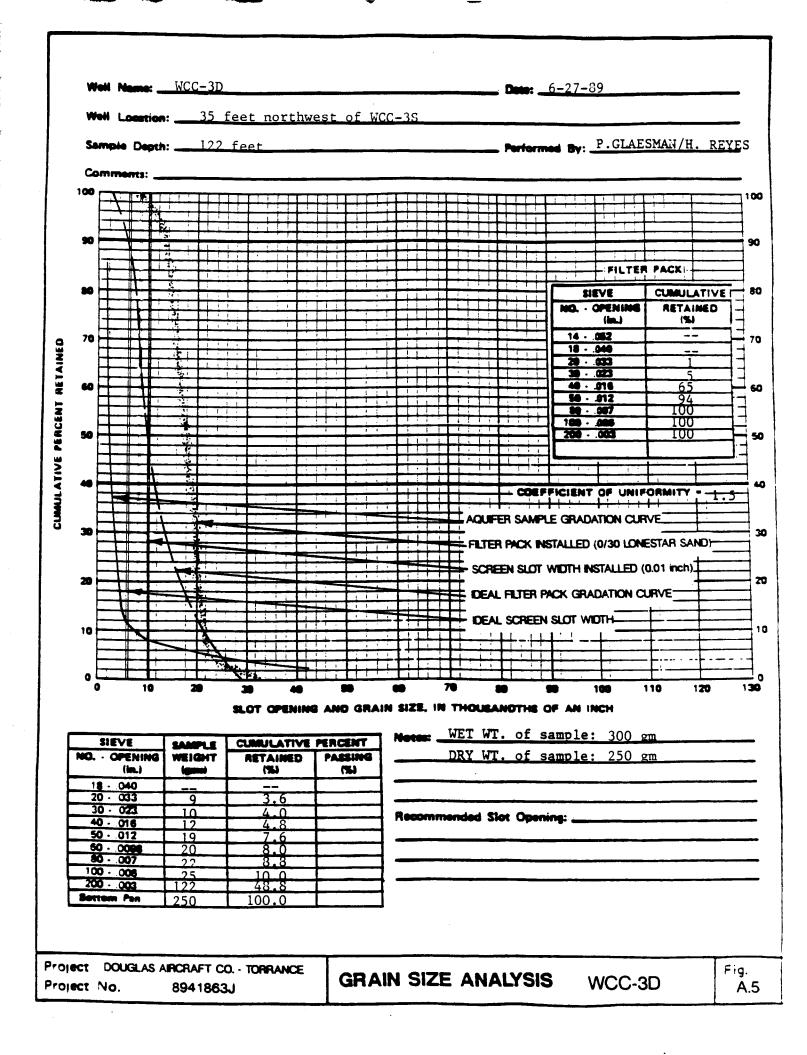


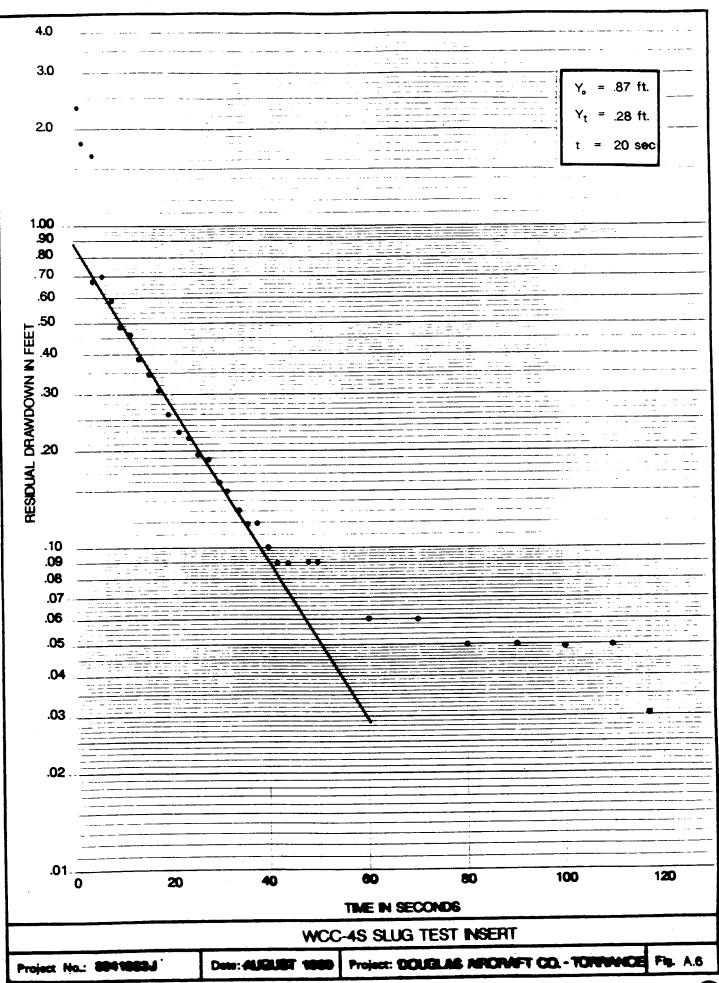


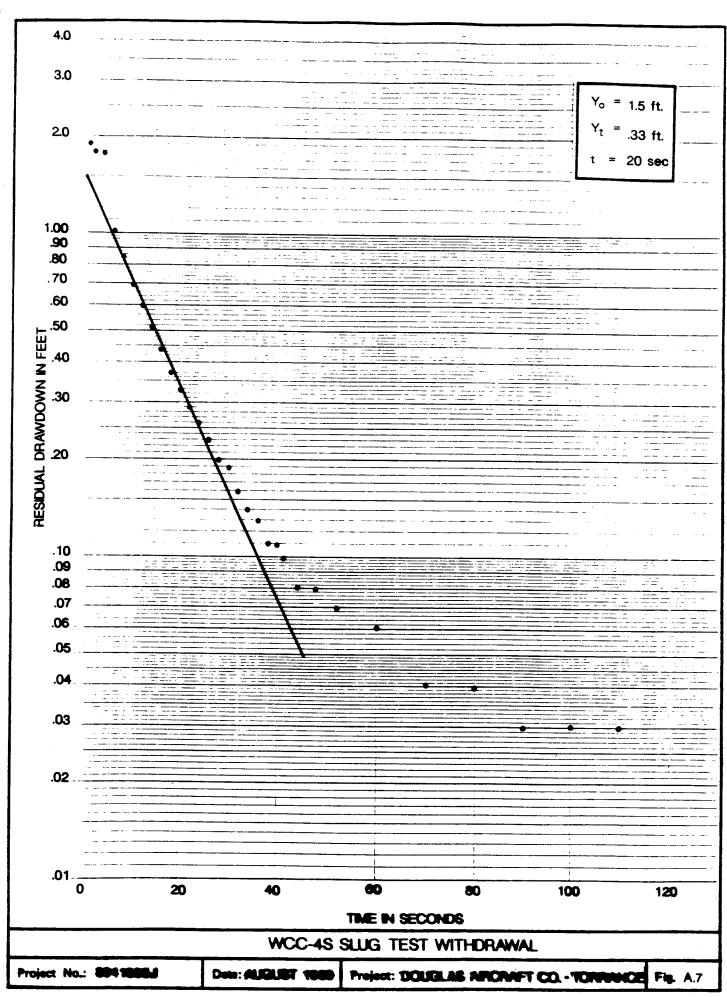


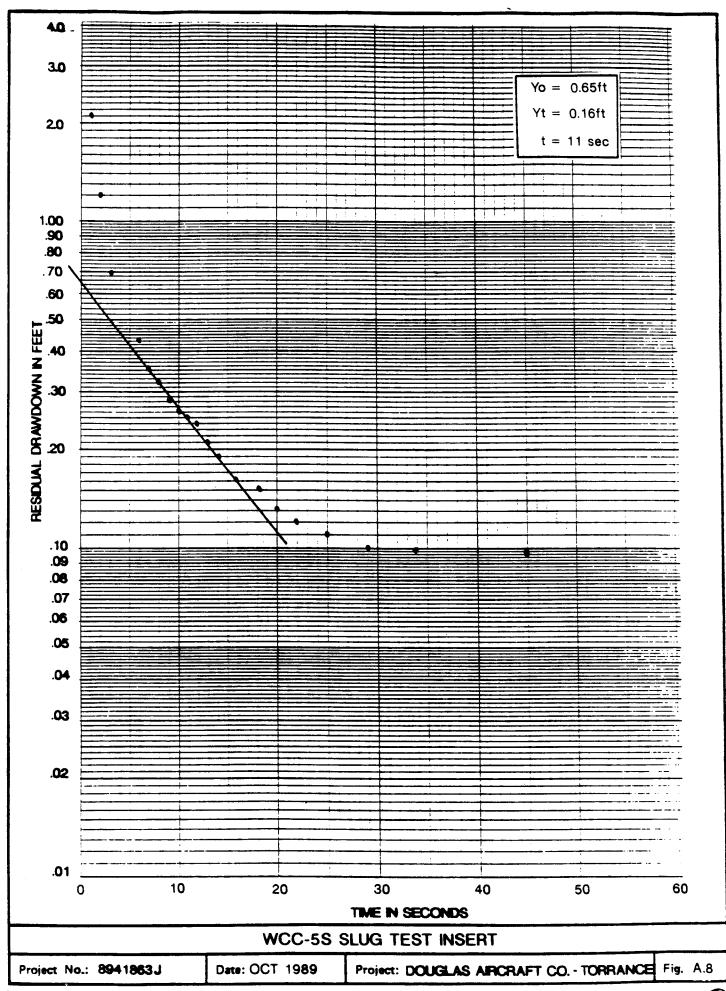


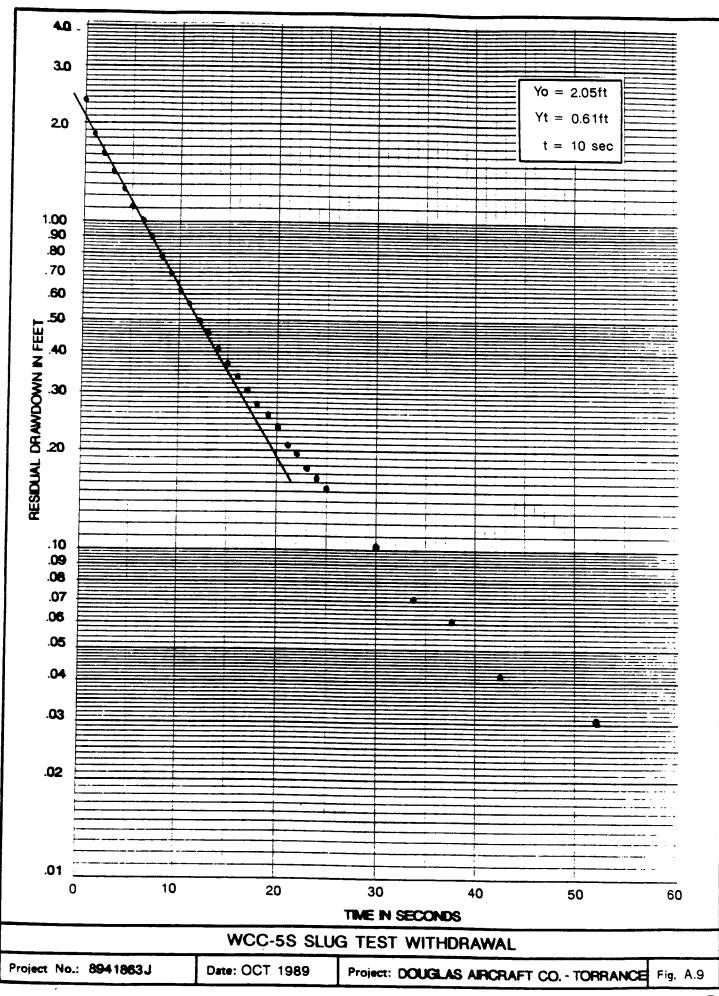


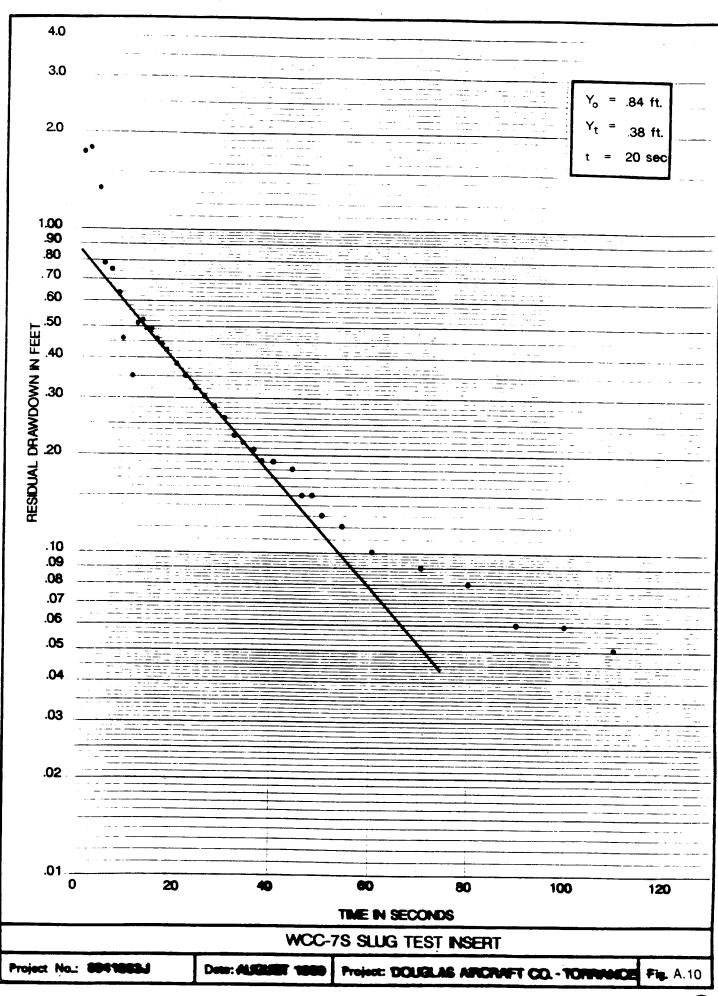


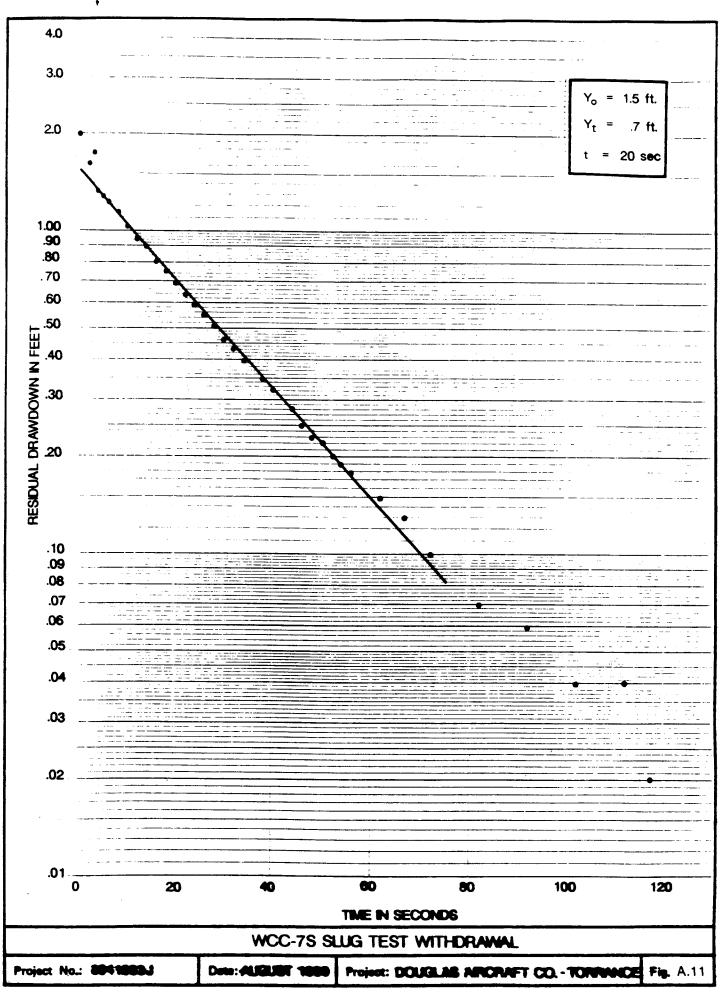


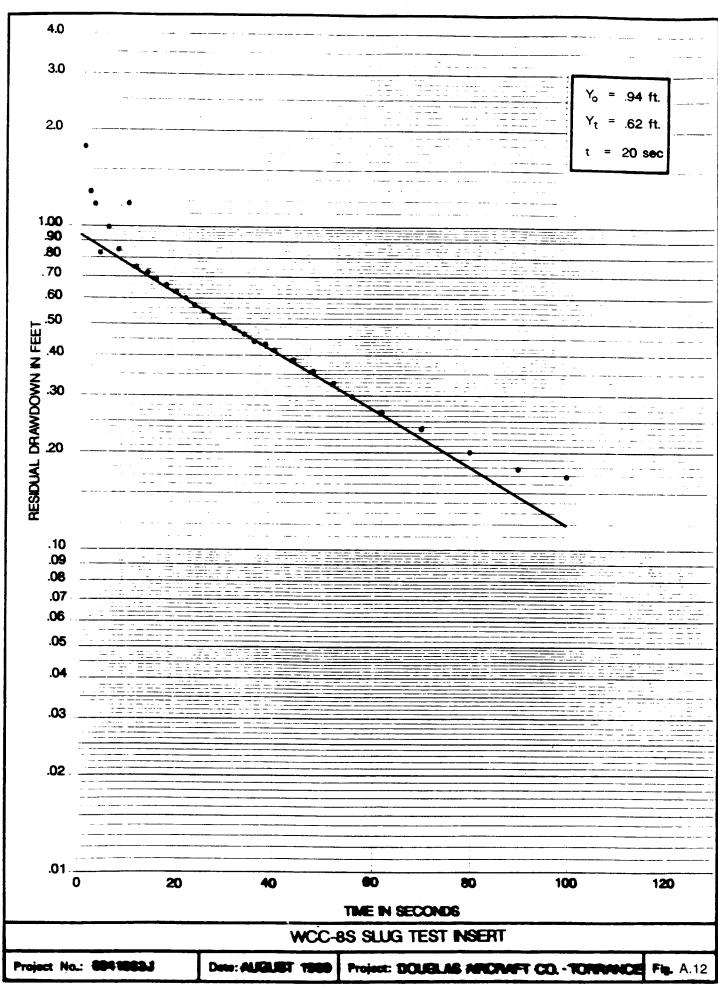


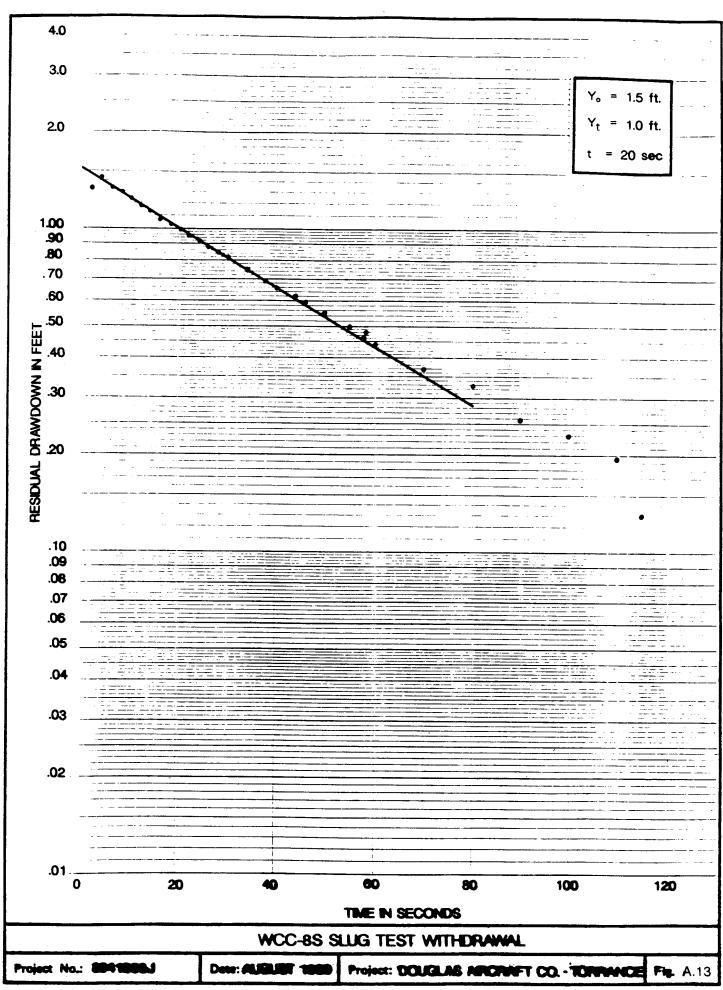


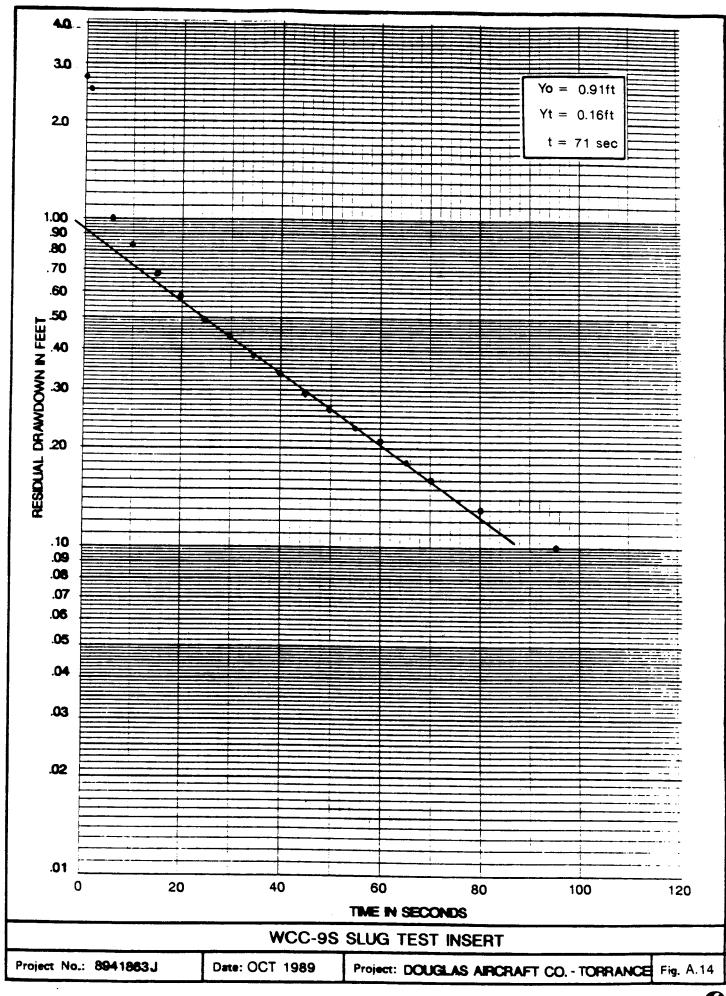


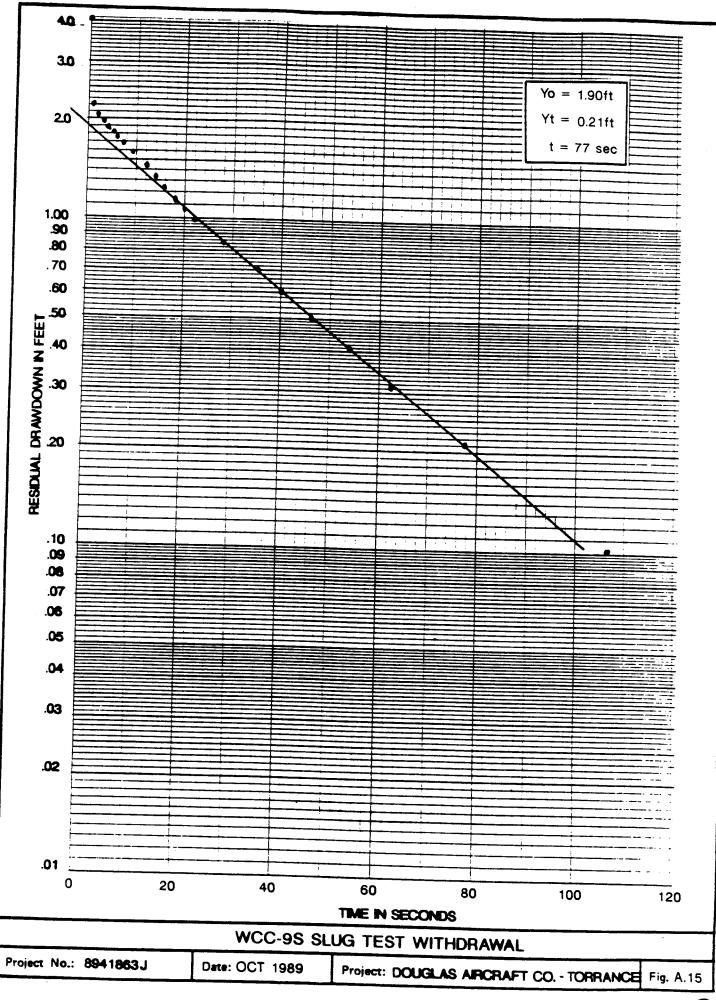


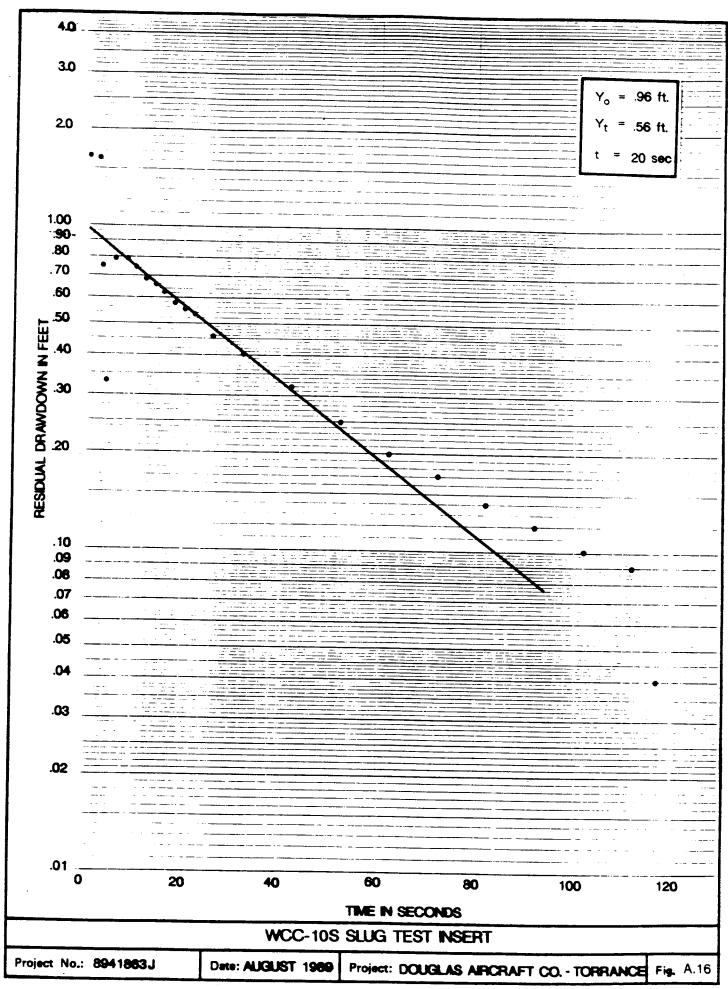


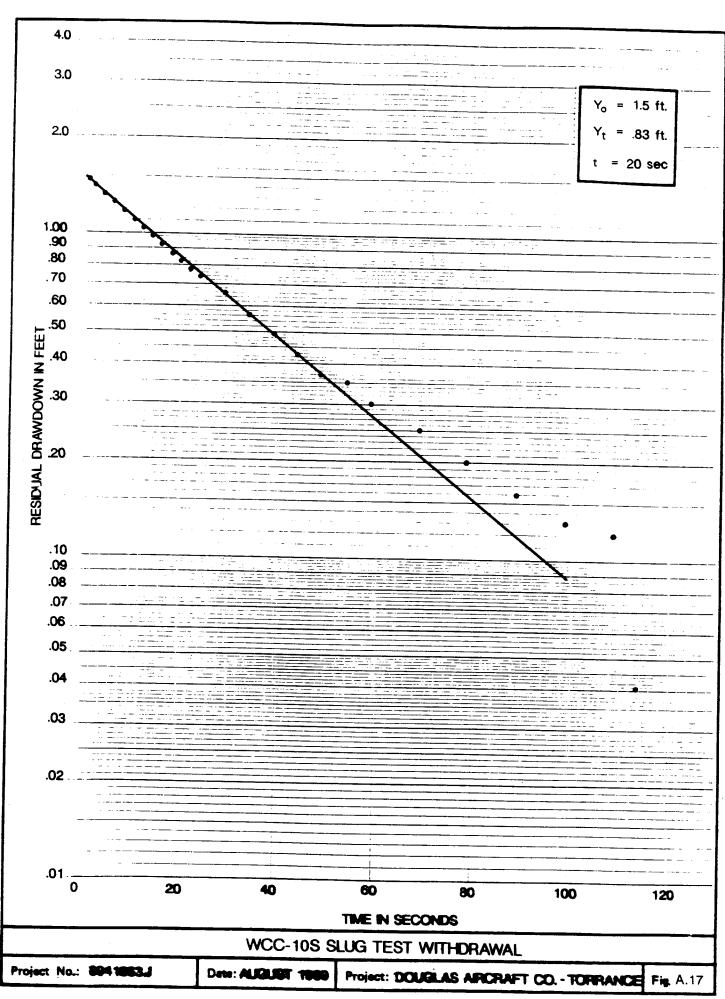


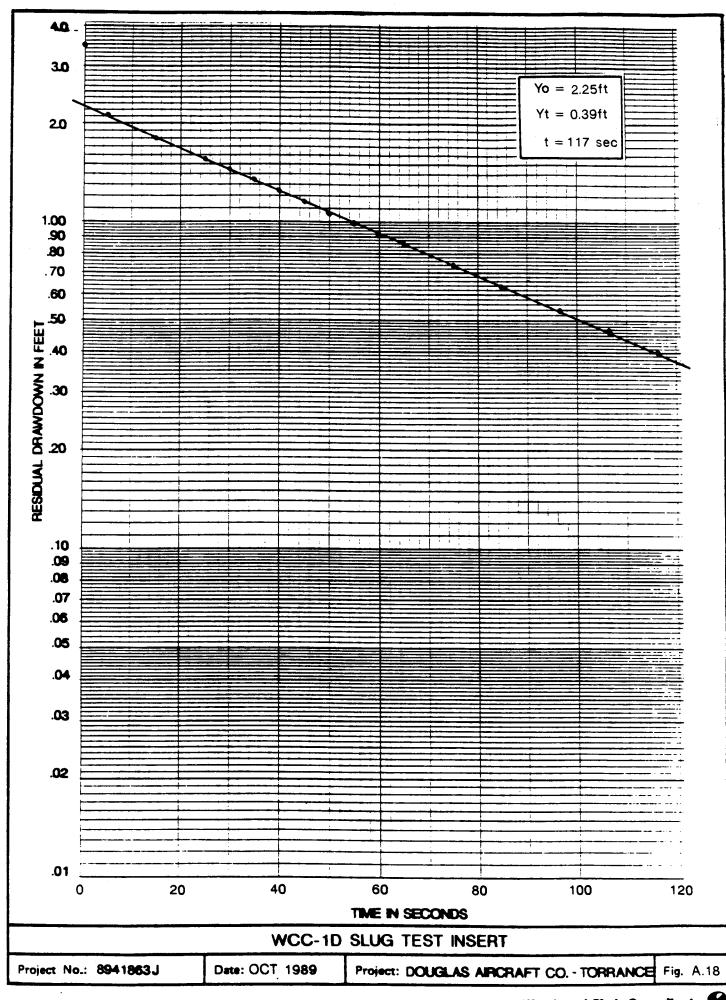


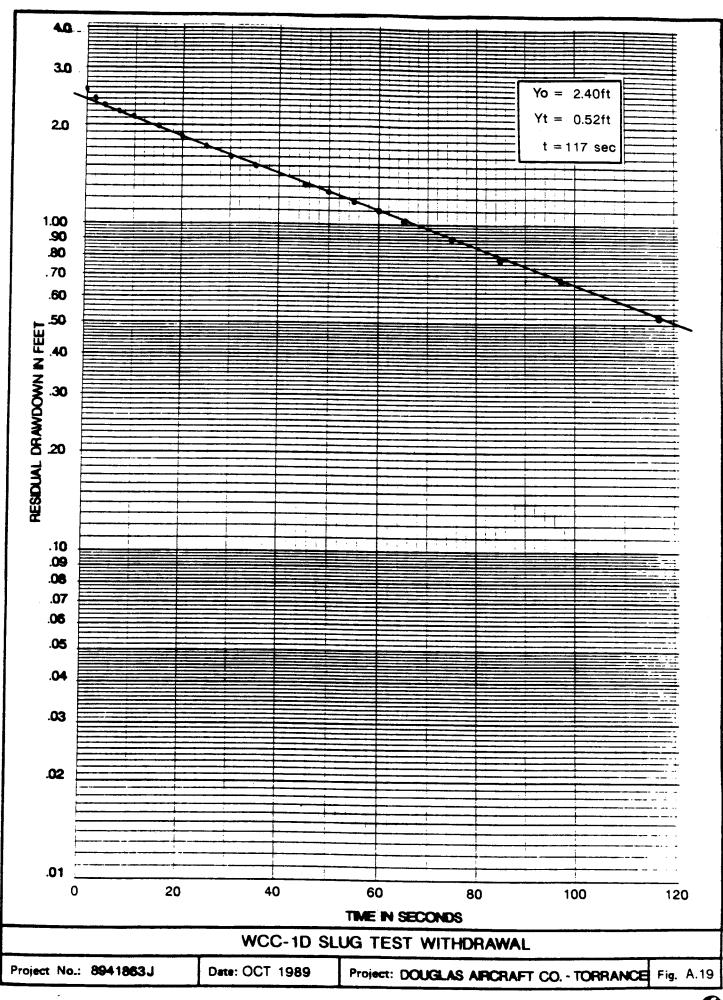


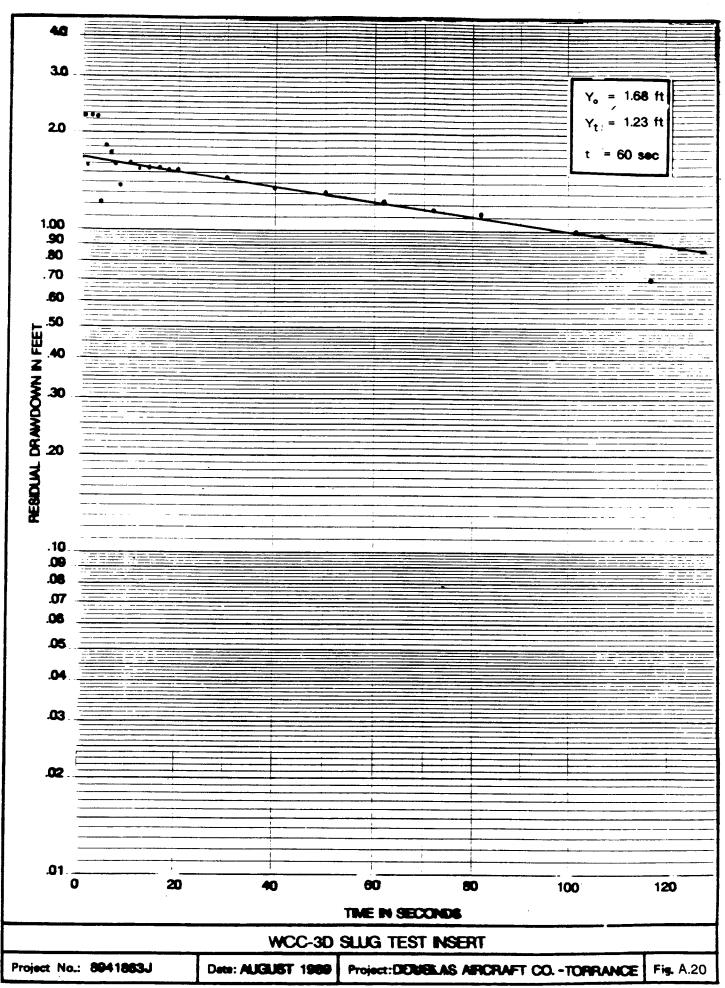


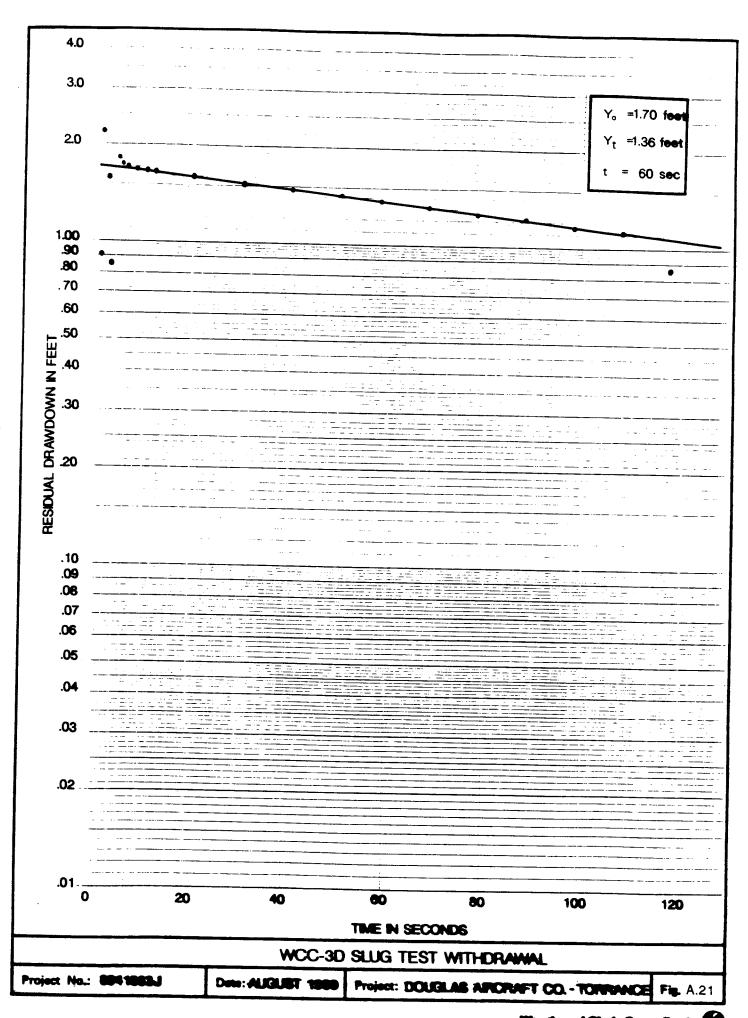


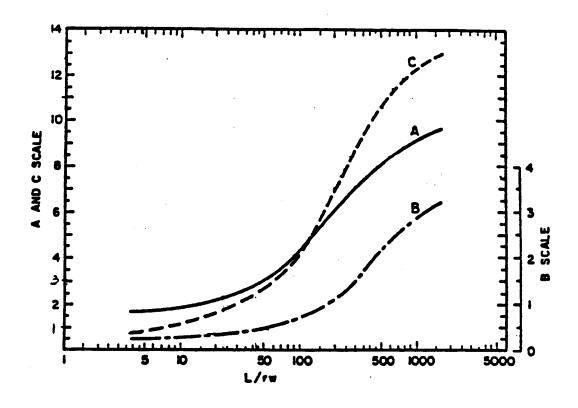












Bouwer and Rice A, B and C Coefficient Curves

Project No.: 8941863J

Date: AUGUST 1989 Project:

DOUGLAS AIRCRAFT COMPANY

Fig. A.22

APPENDIX B

BORING LOGS

BORIN LOCA	ION	· · · · · · · · · · · · · · · · · · ·		EL	EVATIONO DAT	N UM			
DRILL	NG CY	RILLER		D	ATE			DATE FINISHED	
DRILLI EQUIP	NG EMENT			C	OMPLETI	ON .		ROCK	
TYPE	OF SCREEN PERFORATION			D	AMETER DRING (OF		DEPTH (ft)	
No OF	DIST. UNDIST.	CORE			GGED E			WELL (in.) CHECKED BY	
WATER	FIRST COMPL	24 HRS.							
DEPTH (feet)	DESCRIPTION	WE			Blow Count Count		Drilling Rate (Time)	REMA	ARKS
10	Medium dense, moist, light brown, SILTY fine grained SAND (SM). Unified Soil Classification System (USCS: Sample Identification Number. Sample Location and Type. Concrete Bentonite Pellets Native Soil Monterey No. 0/30 Sand Filter Pack Screen Modified California Sampler. Bentonite (Volclay) Grout Pea Gravel (1/4"-1/2") Continuous Core Sample Number of Blows Required to Advance Sone Foot using a 140 Pound Downhole Fwith a 30-inch Drop. Organic Vapor Analyzer (OVA) Readings (field headspace). Rate at which Drilling Progresses. Time at depths noted. Remarks or Comments by Driller or Drilling Supervisor.	ampler dammet							
	ect: DOUGLAS AIRCRAFT COMPANY-TORRANCE	T	12 -	- 	ΤΛ	ם כרם		00	F 2
Proj	ect No.: 8941863J		nt	_ 1	10	BORI	110 L	.00	R-1

	ATION See Location Map		ELE AND	VAT D/	ION ATUM	App	roxima	ately 5	1 Feet above MSL
AGE		Romero	DAT STAI			6-13-	-89	DATE FINIS	
	PMENT CME /5 WITH 8-INCH O.D., H.S.A.		DEP'	TH	(ft)	0	6.5		H (ft)
TYPE	CASING PERFORATION	THICKNESS	BOR	ING	(in	.)	8	WELL	
No C SAME	PACK - OF SE OF SE UNDIST. 14 CORE	THICKNESS AL(S)	LOG				ry mixi		Sand and Benton te
WATE		0 25			. G	laesm		l	1. Razmdjoo
		z		_		Reye			
DEPTH(feet)	DESCRIPTION	WELL COMPLETION LOG		S 	AW.	(PLE		Drilling Rate(Time)	:
PT	DESCRIPTION 월	PLE				O. V. A.		ling (Ti	REMARKS
DE	LITE	WELL OG	o.	ype	Blow Count	Head- Space	Back- Ground	ril	
	5-inch Asphalt concrete.	<u> </u>	- Z	T	C	HS	<u>в</u>	U.W.	
	Loose, moist, olive brown, fine to medium † Lyrained SAND to SILTY SAND (SP-SM).		- 1	\bigvee	7	100	10	0802	
	<u> </u>		-						
-	- Very loose, moist, olive brown, medium - grained SAND (SP).	_	-						
5-	+		_2	X	2	120	10	0815	
-	-		-						
	<u> </u>	-	-						, :
			-						
10	Stiff to hard, moist, dark olive gray,		_ 3	M	11	1000+	10	0819	
-	-		-						
	.		-						
	Medium dense, moist, dark yellowish brown,		-						
15	SILTY fine grained SAND (SM), to SANDY SILT+	1.	- 4	\bigvee	13	1000+	10	0824	
1	Becomes discolored to dark olive gray, with trace of clay.		-						Strong chemical
		-	-						odor.
1	Stiff to very stiff, moist, dark yellowish brown to olive brown, SILTY CLAY (CL).	-	-						
+	·		- 5	М	11	1000+	10	0900	
20-	- +		-	Д	11	1000+	10	0900	
Ī	Ī		-						
1			-						
‡	Medium stiff to stiff, very moist, olive brown, SANDY SILT (ML).	-	-	\bigcup					
25 🕂	-		-6	X	7	1000+	10	0910	
+	+	-	-						
+	<u> </u>	1	-						
I	Loose, moist, light gray, CLAYEY fine grained - SAND (SC).								Encountered mixture
30 +	-		_ 7	X	5	1000+	10	0917	of silica sand and bentonite powder.
+	‡		-						It is probably the backfill material
Ŧ	Very soft, very moist, olive brown, SILTY CLAY		-						from adjacent
†	to CLAYEY SILT (CL-ML).		-						boring.
35 	<u> </u>		- 8	\bigvee	1	1000+	10	0925	
	Dject: DOUGLAS AIRCRAFT COMPANY TORRANCE			<u>L'A</u>				I	D 6 Fig
	pject No.: 8941863J	LOG	C) F	`]	BOR	ING	r	$B-6 \mid \frac{r \cdot g}{B-2} \mid$
	· .							WOODWA	RD-CLYDE CONSULTANTS

DEPTH(feet)	DECCDIDETON	OGIC	ETION		5		MPL o.v.a.	ES (ppm	g ime)	
DEPT	DESCRIPTION	LITHOLOGIC	WELL COMPLETION LOG	No.	Type .			77		REMARKS
40-	Very soft, very moist, olive brown, SILTY CLAY to CLAYEY SILT (CL—ML). Very soft, saturated with chemicals, olive brown, SANDY SILT (ML). Hard, moist, olive brown, SILTY CLAY (CL).	+ + + + + + + + + + + +	-	9	X	30	1000-	10	0935	
45-	Iron oxide stains and root holes.	+ + + + + + + + + + + + + + + + + + + +	-	10	X	23	1000-	10	0950	
50-	Dense, moist, olive brown and yellowish brown mottled, SILTY fine grained SAND (SM), iron oxide staining and trace of clay.	/n + + + + + + + + + + + + + + + + + + +	-	11	X	44	1000-	10	0958	
55	Dense, moist, yellowish brown, fine grained SAND (SP-SM), micaceous.	+++++++++++++++++++++++++++++++++++++++	-	12	X	33	1000-	10	1013	
60-	Hard, very moist, olive to olive brown, SAND SILT (ML), (SILTSTONE?), micaceous, with iron oxide staining.	 	-	13	X	42	1000-	10	1024	
65	Becomes more sandy, grading to SILTY SAND (SM). Bottom of Boring at 66.5 feet.	+	-	14	X	39	1000	10	1039	
70	• • • • • • • • • • • • • • • • • • •	+ + + + + + + + + + + + + + + + + + + +	-	+ + + + + + +						
75		† † † † †	_	† † † † † † † † †						
	oject: DOUGLAS AIRCRAFT COMPANY TORRANCE Dject No.: 8941863J	CON	T. L	, , , ,	<u></u>	0	F I	1 30 R		B-6 Fig. B-3 RD-CLYDE CONSULTANTS

LOC	ation See Location Map				ELE	VATION DATU	M App	roxima	itely 5	1 Feet above MSL
DRII	NCY A & IN Drilling, Inc.	LLER	101. 170	omero	DAT	E RTED	6-13		DATI	HED 6-13-89
TYP:	ING IPMENT CME 75 with 8-inch O.D., F E OF SCREEN	ł.S.	A		DEP	PLETIC TH (ft	OF 6	6.5	ROCI DEP	K TH (ft)
TYP	L CASING IDEDECTION		— TYPE/TI	HICKNESS (S)	BOR	ING (i	n.)	8	WELL	ETER OF -
No (E/SIZE OF PACK — UNDIST. 14		OF SEAL	(s) ()	LOG	GED B	ed with	dry mix		Sand and Bentonite
WATI	ER FH (ft) FIRST _ COMPL _		24 HRS			P. (Glaesn Reye		1	M. Razmdjoo
feet)			್ಷ	N			MPLE			
DEPTH(feet)	DESCRIPTION		LITHOLOGIC	ЕТІ				(ppm)	g	
EP.			HOI ,	I. MPL				-	llin e(T	REMARKS
	5-inch Asphalt concrete.		DO7	WELL COMPLETION LOG	No.	Type Blow	Head- Space	Back- Ground	Drilling Rate(Time	
-	Very tsiff, moist, dark vellowish brown to		-	+	-					
-	dark gray, CLAY (CH).		-	+	1	χ 15	60	20	1142	
	Becomes mottled with iron oxide stains	+	-		- [
5-	and black stains of decomposed roots.	1	-	+	2	X 23	80	20	1149	
	Hard, moist, dark yellowish brown, SILTY		-	1	- -	Δ			' ' ' '	
	CLAY (CL).	‡	-	‡	-					
	- -	-	-	Ŧ	-					
10	-	†	- ·	+	3	X 32	90	20	1155	
		Ţ	- -	Ī	-			20	1133	
	•	+	-	‡	.					
		-	-	Ŧ	.					
15		‡	-	+	4	/ 39	90	20	1202	
	Hard, moist, dark yellowish brown, SANDY SILT (ML).	1		Ī	- ' k	455		20	1202	
+		‡	.	Ţ						
+		Ŧ	.	‡						
20		1	.	Ŧ	5	24	110	20	1000	
~UI	•	+	-	+	. J k	\\^ -	' '	20	1209	
+		Ī		Ī						
‡		‡		‡						
+ +		Ŧ		‡	~ k	1.7	100			
25 1		+	-	+	6	17	120	20	1215	
Ī		İ		+						
‡		‡		Ī						
 		‡		‡		-	:			
30 ∓	Medium dense, moist, olive brown, SILTY	\dashv	.	Ŧ	7	(27	1000+	20	1224	Strong chemical odor.
Ī	fine grained SAND (SM).	+		‡						3331.
‡		Ī		Ī						
‡		‡		‡	_	 			ļ	
35 <u>+</u>		\pm		<u>_</u>	8)	(24)	1000+	20	1231	
	ject: DOUGLAS AIRCRAFT COMPANY TORRANCE ject No.: 8941863J			LOG	\bigcap	ा च	30 P	INC		B-7 Fig.
110	Jeec 110 0341003J								OODWAF	B-4 RD-CLYDE CONSULTANTS

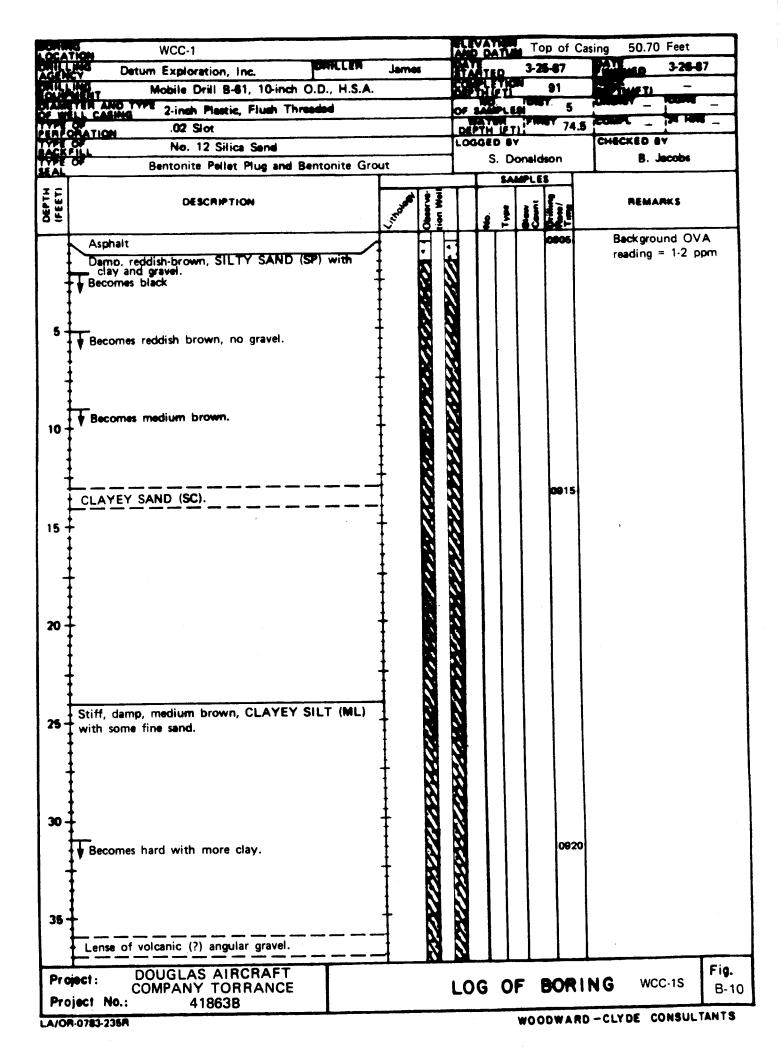
(feet)		CIC	NOI		2	SAN	ИPL	ES	ne)		
DEPTH(feet)	DESCRIPTION	LITHOLOGIC	WELL COMPLETION LOG	No.	lype	Blow Count	Head- O. Space	-		REMA	RKS
-	Medium dense, moist, olive brown, SILTY fine grained SAND (SM).	+		+							
40-	Hard, moist, dark yellowish brown, SILTY CLAY (CL), (SILTY CLAYSTONE?), micaceous, with iron oxide spotting and hairlike root holes.	† + + + + + + +		9	X	32	1000-	20	1240		
45-	Becomes olive color.	‡ + + +		10 10	X	24	1000-	20	1251		
50	Medium dense, moist, mottled with olive gray and yellowish brown, SILTY fine grained SAND (SM), with trace of clay and iron oxide staining.		-	+ + + + 11 + + + + + +	X	20	1000-	+ 20	1304		
55	Becomes medium grained with abundant shell fragments, strong HCL reaction.	T + + + + + + + +		12	X	36	1000-	+ 20	1316	-	
60-		† † † †	-	‡ 13 + +	X	28	1000	+ 20	1329		
65	Medium dense, moist, olive gray, SILTY fine grained SAND (SM-ML), very micaceous.	+ + + + + + + + + + + + + + + + + + + +		14	X	27			1342		-
70		+ + + + + + + + +		+ + + + + + + + + + + + + + + + + + + +							
75	- - - -	+ + + + + + + + + + +		+++++++++++							
1	pject: DOUGLAS AIRCRAFT COMPANY TORRANCE	CON	T. I		3	0	F I	30F		B-7	Fig. B-5 NSULTANTS

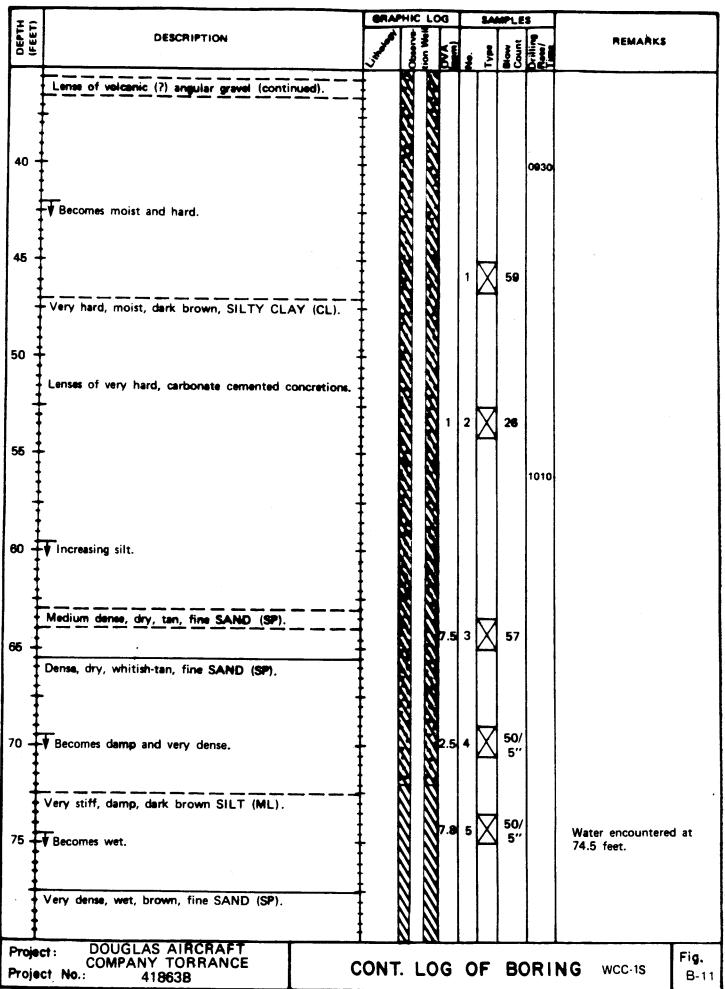
	TION See Location Map			ELEV	VATION DA'	ON TUM	Appr	oxima	tely 51	Feet above	MSL
DRIL	NCY A & R Drilling, Inc.	101. 110	mero	DAT	E TEI) 6	5-14-	-89	DATE FINISI	HED 6-14-	-89
DRIL EQUI TYPE	PMENT CME /3 WITH 8-INCH O.D., H.S.	Α		DEP'	TH (ft)	0.0	5.5	ROCK DEPTH	- (ft) -	
WELL	CASING PERFORATION	TVDE /TT	HCIMECC	DIAM BOR	ING	(in.)	8	WELL		
SANE No C SAME	SIZE OF PACK - UNDIST. 14	OF SEAL	IICKNESS (S)	LOG				ry Mixt		Sand and Bent	onite
WATE	R FIRST COMPL	24 HRS.	0	Log	Ρ.	GI	aesm			. Razm djog) !
	H (ft)						Reyes				
DEPTH(feet)		CIC	LETION		S_{I}	AΜ	PLE	S	ne)		!
H.L.	DESCRIPTION	ОПС	LE				O. V. A.		ing (Tir	REMARI	KS '
E		LITHOLOGIC LOG	WELL COMPI		be	Blow	Head- Space	Back- Ground	Drilling Rate(Tim		
	- 6-inch Asphalt concrete over 6-inch base		<u> ≅83</u>	No	Type	30 20 20 20 20 20 20 20 20 20 20 20 20 20	He Sp	G Ba	고 있		
-	material.	- -	_	1	\bigcup_{i}		1.0	10	07.45		
-	- Very stiff, moist, very dark brown, SANDY - CLAY (CL), with root holes.	-	-	- '	Д	16	18	12	0745		
-	-	-	-	-							
5-	Becomes hard.	-		2	\prod_{i}	43	47	12	0758		
	- Dense, moist, yellowish brown, CLAYEY fine -	-									
	grained SAND (SC).	-	-	-					Ì		
	-Hard, moist, dark brown, SILTY CLAY (CL), -	-	_	-							!
	with root holes.	_	-	L 3	\forall	58	42	12	0806		-
10 –	_	-	-	-	Ŋ,	اهد	42	12	0000		
	-	-	-	-							
	Medium stiff, moist, olive brown, SANDY		-								:
		- -	-	-							
15	<u> </u>	• -	_	4	\mathbb{X}	11	45	12	0815		
	-		-	-							;
	Very stiff, moist, dark brown, SILTY CLAY (CL)	-	-	<u> </u>							
†	with hairlike root holes.	-	-	†							:
20		_		5	\bigvee	21	20	12	0820		
		-	-		\square						
	Very stiff, moist, dark brown, SILTY CLAY (CL) with hairlike root holes.	-	-	+							
1		-	-	‡							
	-	<u></u>	-	6	M.	15	42	12	0826		
25	-	-	-	+ 0	Д	١٠	42	12	0020		
†	Very stiff to hard, moist, dark olive brown,	-	-	ŧ							
I	SILTY CLAY (CL), with calcareous nodules and hairlike root holes.	-		Ε							
+		-		‡	Ц						
30	-	-	-	 7	X	26	58	12	0833		
1			-	-							
	Very dense, moist, dark olive brown, SILTY	-	-	+							<u>!</u> !
	fine grained SAND (SM), with large calcareous	-	-	‡							
35 -		- -	_	8		86	68	12	0841		
	Dject: DOUGLAS AIRCRAFT COMPANY TORRANCE		L	<u> </u>	K X			L	<u> </u>		Fig.
	oject No.: 8941863J		LOG	, ()F	']	BOR	ING	r	B-8	B-6
									WOODWA	RD-CLYDE CON	

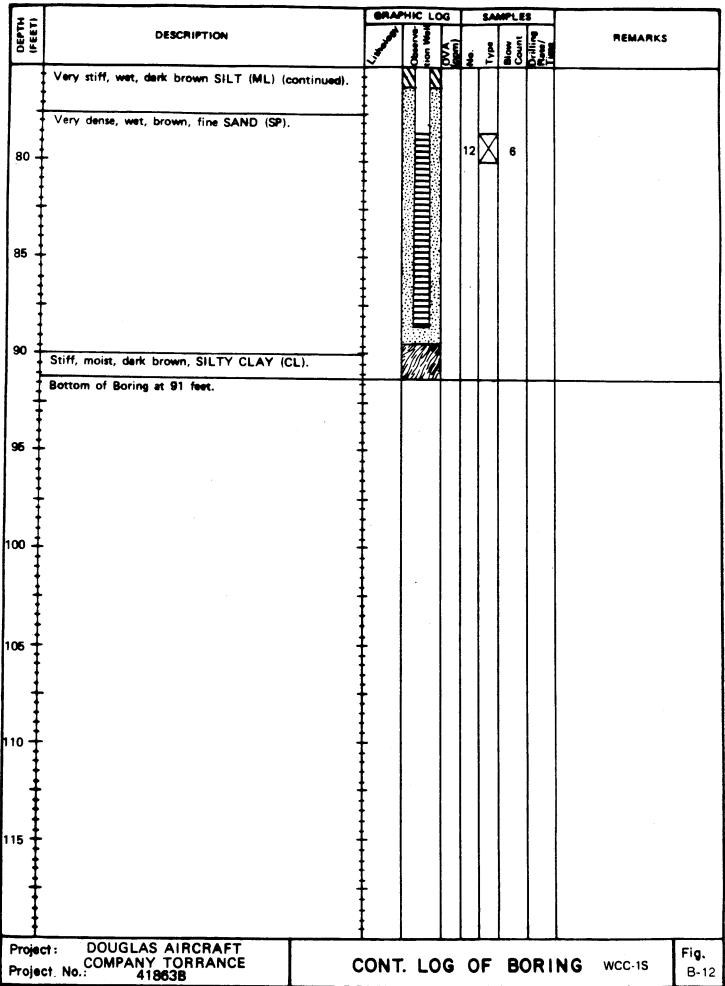
feet))!C	LETION		S	SAN	иP:	LE	S	(e)		
DEPTH(feet)	DESCRIPTION	0010	LET				O. V.		(ppm)	ing (Tim	REMAI	RKS
DEF		LITHOLOGIC	WELL COMPI	No.	ype	Blow Count	Head-	pace	Back- Ground	Drilling Rate(Time)		
-	Very dense, moist, dark olive brown, SILTY fine grained SAND (SM), with large calcareous nodules.	<u> </u>		-	-			-				
-	3 Lens of hard, moist, dark olive brown silty clay.	, ‡	-	+								
40-	Silty sand becomes very moist, olive in color.	+	_	9	X	39	12	5	12	0848		
-	Very stiff to hard, moist, olive, SANDY CLAY (CL), with iron oxide stains and calcareous nodules. (Strong HCL Reaction)			- - - -								4
45-		‡	-	10	Х	29	23	0	12	0857		
-	Medium dense, moist, olive gray and yellowis brown mottled, SILTY fine grained SAND (SM (SP), with iron oxide staining, micaceous.			 - - - -								
50-		+	-	11	X	24	100	_ +	12	0912		
		‡		‡ †								
55-	Becomes dense, medium grained with abundant iron oxide, calcareous nodules, and shell fragments cemented.	-		12	X	35	100	0+	12	0925		
55-	Very dense, moist, yellowish brown, medium grained SAND (SP).	+	_	+ + + + + + + + + + + + + + + + + + + +								
-	- - -	‡		† † †	7	0.5			4.0			
60-	<u>-</u> - -	$\frac{1}{1}$	-	<u> </u>	X	85	100	0+	12	0934		
	-Hard, moist, olive, SANDY SILT (ML), - (SILTSTONE?), micaceous.	+		†								
	Dense, moist, yellowish brown, medium grain SAND (SP).	ed-		<u> </u>	7	75			10	0050		
65-	Dense, moist, olive, SILTY fine grained SAND (SM).	\$	-	‡14 ‡	X	33	100	0+	12	0952		
	-Bottom of Boring at 66.5 feet.	+		+								
	- - -	Ŧ		Ŧ								
70		+		+								
	<u> </u>	‡		‡								
	- - -	Ŧ		Ŧ								
75	_ -	+	-	+								
	<u>.</u> -	‡		‡								
Pro	oject: Douglas Aircraft Company Torrance	CON	т т	<u>†</u>			l E		OP.	INC	D 0	Fig.
1	oject No.: 8941863J	CON	1. L		<i>J</i>		Г		——		B-8	B-7

BORING LOCATION		Location Map				ELEV AND	ATIOI DATU	M Ap	oroxim	ately 5	1 Feet abov	e MSL
DRILLING AGENCY DRILLING	A & R Driling,		RILLER	141. 170	mero	DATE		6-14		DATE		-89
TYPE OF		n 8-inch O.D., SCREEN	H.S.	A		DEPT	PLETI 'H (f ETER	t) 0	6.5	ROCK DEPTI	H (ft) —	
WELL CASII TYPE/SIZE SAND PACK	OF -	PERFORATION		TYPE/TH	IICKNESS (S)	BORI	NG (in.)	8	WELL	(IN.) Sand and Bent	-
No OF SAMPLES	DIST.	UNDIST. 1	4	OF SEAL	(S)	LOGO	ED I	3Y			KED BY	onite
WATER DEPTH (ft)	FIRST	COMPL		24 HRS.				Glaesm . Reye		М	I. Razmdjo	0
				<u>ي</u>	Z			MPLE				
T. L.	DECCE	II OITHCII		00.0	ETIC				(ppm)	g ime	D. D. C. C.	
DEPTH(feet)	DESCR	RIPTION		LITHOLOGIC	PL.					llin e(T	REMAR	KS
				1771 1.0G	WELL COMPLETION LOG	N O	Type Blow	Count Head- Space	Back- Ground	Drilling Rate(Tim		i ·
mo	iterial.	rete over 9-inch b	_									
	ium stiff, saturate Y (CL).	d, dark brown, SiL1	<u> </u>	_	-	1	X 6	100	19	1107		
l <u>+</u>	, ,		-	_								İ
5 + 0	ecomes very stiff.		-	-	-	2	$\sqrt{2}$	1 100	19	1112		:
"		•		-			Δ					
‡			-	-	-							
 			-			-						
10 B	ecomes hard.		-	-	-	3	V 4	7 100	20	1120		!
			-		-		Δ					
+			-	-	-	+						
∏ в	ecomes more silty	, very stiff.	-			-						
15				 	-	4	$\sqrt{2}$	5 100	20	1124		
15 +		·			-		4					
	um dense, moist, ed SAND (SM).	olive brown, SILTY	fine -	-	-							
+	, ,				-	-						
+			-	-	-	- 5	$\sqrt{3}$	100	20	1130		
20 —			_	_	_	<u> </u>	4		20	1130		
	to very stiff, mois (ML), micaceous.	st, olive brown, SA	NDY -	-	-							
+	(-2,,		-		-	+						
 			-	_	_	6	J 1,	5 130	20	1137		
25 +			_	-	-	+	4''	1130	20	1137		
		olive brown, SILTY potting and root h			-							
+ (32)"	with hori oxido s	potting and root in	-	-	-	+						
 			-	-	-	Ţ _	\d\ 2.	5 130	20	1145		
30 —			_	 -		‡′¦		130	20	1145		
Ī						Ξ						
	ım dense, moist, ed SAND (SM).	olive brown, SILTY	fine -	<u>-</u>	-	‡						
+			1		-	8	4,	1 125	20	1153		
35 +				_		⊢°.	M^2	123	20	1133	<u> </u>	
Project Project		COMPANY TORRANCE	Ξ		LOG	- C	F	BOF	RING	ī	B-9	Fig. B-8
rroject		10000		····							RD-CLYDE CO	

leet)		21	NO		S	SAN	иРLЕ	ES	(e)	
ľH(c	DESCRIPTION	100	ETI				O. V. A.	(ppm)	յջ Tim	REMARKS
DEPTH(teet)	DESCRII HON	LITHOLOGIC	WELL COMPLETION LOG	No.	Lype	Blow	Head- Space	Back- (C) Ground (mdd)	Drillin Rate(ILIMAIIIO
40	Medium dense, moist, olive brown, SILTY fine grained SAND (SM). Hard, moist, dark olive brown, SILTY CLAY—(CL), micaceous.	+++++++++++++++++++++++++++++++++++++++	-	9			120	20	1202	
45	Becomes very stiff, olive, with iron oxide spotting and decomposed roots.	+++++++++++++++++++++++++++++++++++++++	-	10	X	25	130	20	1211	
50-	Dense, moist, mottled, olive gray and yellowist brown, SILTY fine grained SAND to SAND (SW-SP), with iron oxide staining. Becomes less silty, grades to dense, moist	+ + + + + + +	-	11	X	45	340	20	1224	
55	yellowish brown, fine to medium grained SAND (SP), micaceous.	** + + + + + + + + + + + + + + + + + +	-	12	X	42	900	20	1235	Moderate Chemical odor.
60	Dense, damp to moist, olive gray, SILTY fine grained SAND (SM), very micaceous.	+ + + + + + + + +		13	X	46	490	20	1250	
65	Hard, moist, olive, SANDY SILT (ML), (SILTSTONE?), micaceous. Bottom of Boring at 66.5 feet.	+	-	14	X	30	1000-	20	1303	
70	• • • • • • • • • • • • • • • • • • •	+++++++++++++++++++++++++++++++++++++++		† † † † †						
75	- - - -	+++++++++++++++++++++++++++++++++++++++		+						
1	ject: DOUGLAS AIRCRAFT COMPANY TORRANCE	CON	T. L	00	\ J	0	F E	30R		B-9 Fig. B-9 RD-CLYDE CONSULTANTS







BORIN				WCC-2		igure				ELA	VATION D DATE	M To	op of	casing @ 50.59	ft.
DRILLI	NG Y	Α	& R	Drilling,		ORILLER	N	1. Smi	th	DA ST.	ITE ARTED	10-2	8-87	B ATIVITED	-87
	EMENT			CME 75						DE	MPLETIC PTH (A)=	90.6	ROCK — DEPTH (ft) —	
WELL	DF CASING	4*		40 PVC	- FERFORATIO	N) Slot		80	WETER RING (ir	1.)	10	DIAMETER OF 4	
No OF SAMPL	ES		DIST.	_	UNDIST.	5	COF		-	مر	CCED A	ı H. Rey	A C	CHECKED BY B. Jacobs	
WATER DEPTH	(ft)		FIRST	73	COMPL		24	HRS. 71	.1		r	. Rey	C2	b. odcob	J
_							1				SAMPL				
DEPTH (feet)				DESCRIP:	TION			WELL		INF	ORMA	IION	Drilling Rate (Time)	REMARKS	
								LOG			ایر	0.V.A.	6E	·	
							ı		ò	Ty ex	Blow	(ppm)	Sate Sate		
	Asph													Background OVA	
1	Medic	um s	tiff, ver .AY (CL	ry moist,	dark yellow	ish brow	/n, ‡						1306	Background OVA reading = 5 ppr	
1	-)	.AT (CL	-).			1							leading — 5 pp.	••
1	TE	Зесоп	nes ver	y dark gr	ayish brown	٦.	İ								
1	. T			,			ł								
5-	-						- 1	14 17							
I	•						Į						1308		
- 1	•						ţ	1 11							
7	•						7				·				
1	T	Color	change	to yellov	vish brown.	Become	es ‡	7 17							
10‡	· · · · · ·	stirrer	less n	noisture, :	SANDY CLA	Y (CL).	- 1								
‡							Į	3 3							
- ‡							Į	1 1		1					
‡	•						ţ	13 13		$ \ $					
ł							Í	7 1		$ \ $					
15							Ŧ								
T							7				i		1317		
Ŧ	— c	Contin	ued SA	ANDY CLAY	Y (CL). Les	e etiff	ł								
Ŧ	, T	nore	moist.	NID! OEA	, (OC). Ces		- {								
‡							ţ						1		
20							1	1 1		$ \ $					
20	•		•				†						1319		
t							_						1319		
±	♦ G	rades	to SI	LTY CLAY	(CL).		_ }								
Ŧ	Mediu	ım st	iff, ver	y moist,	olive brown,	, SILTY	7								
Ŧ	CLAY	•					7	$A \square$							
25							1								
‡													1323		
‡							1								
†							1	1 1							
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30							}								
1							7						1327		
Ŧ							ł							1	
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‡							1		•					1	
7=							1	1 /	ł						
35							†	11 11	}			ļ	1333		
‡							1	1 1	ł			ĺ	1333		
								11 11	<u> </u>						
			BLAS .	AIRCRAF	T COMPA	ANY			LC)G	OF	BOR	ING	WCC-2S	Fig.
Proj	ect N	10.:		87418	63D						<u> </u>				B-13
													WO	DOWARD-CLYDE CONSULTAN	TS

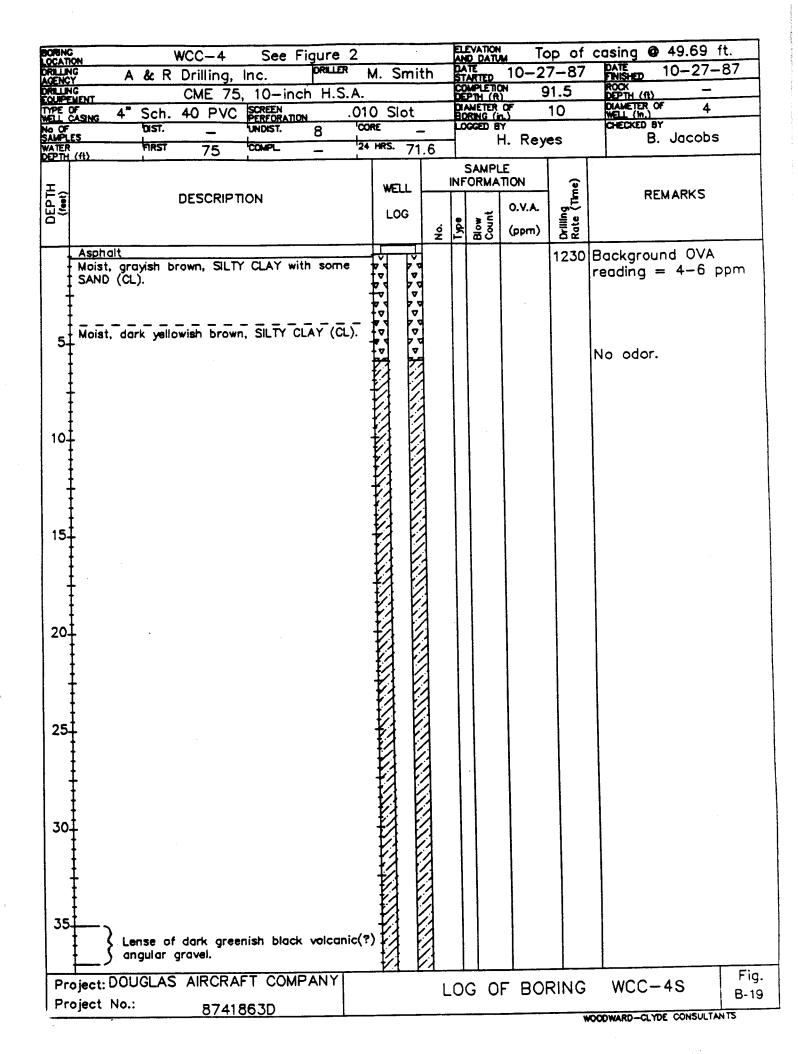
DEPTH (feet)	DESCRIPTION	roc Mett	No.	Type	Blow Count	0.V.A. (ppm)	Drilling Rate (T.)	REMARKS
40	(continued) Stiff, moist, olive brown, SILTY CLAY (CL).							·
45	Dense, moist, olive brown, fine grained, SILTY SAND (SM), with shells.		1	X	34	5	1342	
50-							1357	
55-	Very dense, damp, strong brown, fine grained SAND (SP) to SILTY SAND (SM), iron oxide staining.		2	X	60	5	1402	
60-							1423	
65-	Dense, moist, olive, fine grained SILTY SAND (SM), some iron oxide stains.		3	X	42	6	1433	
70-							1500	
75-	Becomes wet. Very dense, wet, olive brown, fine grained, SILTY SAND (SM).		4	2	68	6	1512	₩ater at 73 feet
80-							1544	
1	oject: DOUGLAS AIRCRAFT COMPANY oject No.: 8741863D	CONT	Γ. L	00	G O	F BO	RING	WCC-2S Fig. B-14

DEPTH	DESCRIPTION	WELL	No.	Туре	Blow Count	0.V.A. (ppm)	Drilling Rate (T.)	REMARKS
85	(continued) Very dense, wet, olive, fine grained to very fine grained SILTY SAND (SM), micaceous, with some clay interbedding and iron oxide staining.		5		50/ 3"	5	1600	
90								
95	Battom of Boring at 90.5 feet.	† † † † † † †				·.		Note: 48 gallons of city water used to offset hydrostatic head of flowing sands during well installation.
100	• · · ·	† † †						
105	- -	† † †						
110-		+ + + + + + + + + + + + + + + + + + + +						
115		+						
120-		+++++++++++++++++++++++++++++++++++++++						
125-		† † † † †						
Pro	Dject: DOUGLAS AIRCRAFT COMPANY	CON	T. 1	.00	G OF	- BO	RING	WCC-2S Fig.
	pject No.: 8741863D							B-15

BORING	G ION			WCC-3	See F	igure 2				ELE	VATION DATUS	To	op of	Casing @ 51.19 ft.
DRILLIN	4G	A		Drilling,		DRILLER	_	Smil	th		E RTED		6-87	
	NG EMENT				, 10—inc	h H.S.A				COL	PLETION		92	ROCK — DEPTH (ft)
TYPE	OF CASING	A **	Sch.		SCREEN PERFORATION		010 9	Slot			METER (10	DIAMETER OF 4
WELL OF	CASING		DIST.	TO FVC	PERFORATION		CORE	3101			ing (in. Ged by		10	CHECKED BY
NO OF SAMPL WATER	ES		FIRST	73.5	COMPL	U	24 HRS	74		-		. Rey	es	B. Jacobs
WATER DEPTH	(ft)		-	73.3	1		' 	-/-	. 0	ـــــــ	AMPLE	•		
_								_, ,			RMAT			
DEPTH (feet)				DESCRIPT	10N		*	ELL		П	T		Ě	REMARKS
							L	.og			75	0.V.A.	50	
									ò	Š	Count	(ppm)	Drilling Rate (Time)	
	Asph	alt												Background OVA
ł	Damp	, ver	y dark	grayish bi	rown, fine	grained	74	2,4					0040	reading = 4-6 ppm
}	ZILIY	SAN	D (2M) with sma	ili gravel.		4	P 4						reading - v o pp.v.
1	Soft,	very	moist	, dark gray	y to black	SILTY	뒣	₽						
1	CLAY	(Cr)					뒿	2 4						
5.			ies les	ss moist, d	lark yellow	ish brown	, 부 직	₽ ₽						
	' s	tiff.					习	₹			ļ			
	}						1/	17						
							\Box				İ		1	
1							H							
,,		ontin	ued S	ILTY CLAY	(CL). Bec	omes mo	re 🚺							
10-	-' s	itiff, i	no det	ectable ad	or.					$ \ $				
}							12							
}	•						E		1	П	1			
1	-						H	(/	1		ļ			
1							[/							1
15	<u> </u>						11	1	1		Ì			
.]	_						-						0855	•
1									1		ĺ			
1	-						1/		1					
1	Dens	 e. ma	 oist. w	ellowish bro	wn, CLAY	EY SAND	-to[/		1					
ł	SAND	Y CL	AY (S	C-CL).	,		11		1					
20-	-		•	•			1		1					
1									1				0857	No odor.
1				ILTY CLAY			17		1					
-				sh brown S			划		1				1	
}							1/	1	1					
7=					•				1					
25-							1/	1	1				0905	5
}	ŀ								;					
}	Ł						1	1	1					
1	-						1/		1					No odor.
	<u> </u>								1					
30-	Ł						1/		1					
	ł								1					
•									1					
1	3	Len	s of v	rolcanic ast	n.		1/							
. :	ر — ا	•					1//		1			ļ		
	ł								4					
35-	-						T/		1					_
	. .						1/		7				0913	١
	<u> </u>						1/		3					
Pro	أحدا	2011	SLAS	AIRCRAF	T COMP	PANY	15.6	<u> </u>	1					WCC 78 Fig
	-								L	OG	OF	BOF	KING	WCC-3S $\frac{1}{B}$
	ject	NO.:		87418	63D									
													WC	DODWARD-CLYDE CONSULTANTS

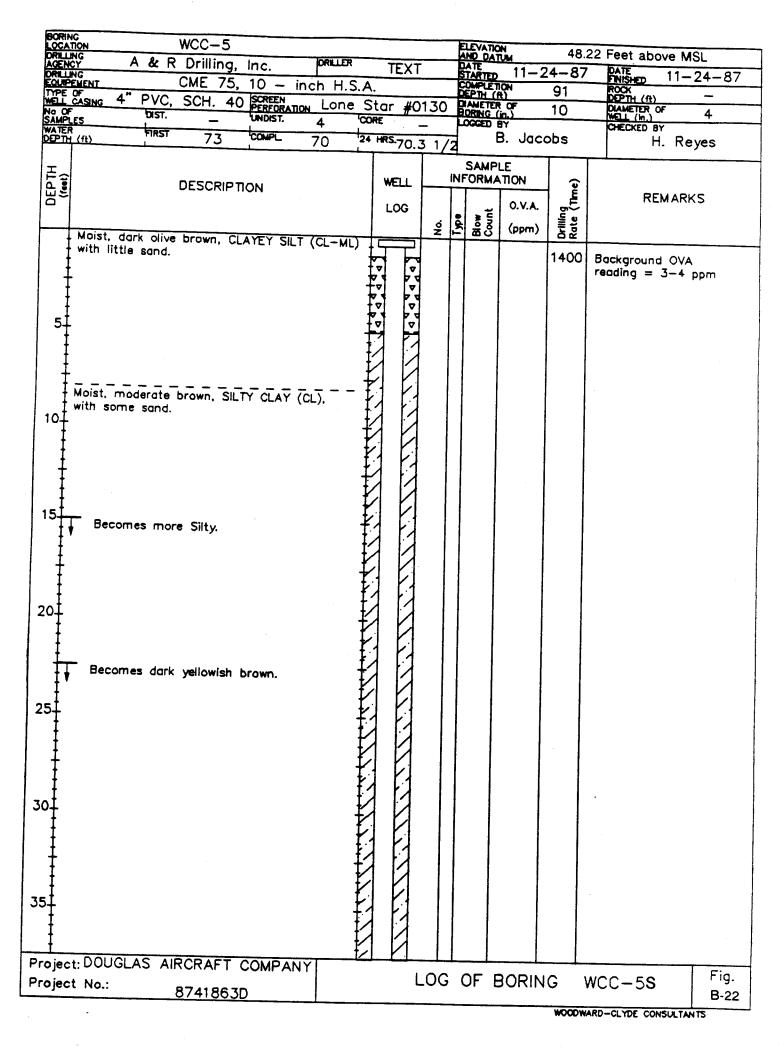
DEPTH (feet)	DESCRIPTION	WELL LOG	Ó	Туре	Blow Count	0.V.A. (ppm)	Drilling Rate (T.)	REMARKS	
40	(continued) Stiff, moist, olive brown, SILTY CLAY (CL).						0921		
45	Lens of stiff, moist, alive, SANDY SILT (ML), micaceaus with decomposed pieces of roots.		1	X	25	30	0924	Earthy odor.	
50	Clay becomes more stiff, interbedded with lenses of dense, moist, yellowish brown,						0937		
55	medium grained SILTY SAND (SM) with shells, partially cemented and crystalized calcite.		2	X	30	570	0945	Moderate chemical odor.	
60	· ·						1005		
65	Dense, moist, yellowish brown to olive gray, very fine grained SILTY SAND to SAND (SM-SP), micaceous.		3	X	46	440	1015	Easier drilling. Moderate to strong chemical odor.	
70	Very stiff, very moist, olive brown, SANDY SILT (ML), micaceous with iron oxide stains.		4	X	35	+1000	1035	Very easy drilling. Strong chemical odor.	
75	Becomes wet. Very dense, wet, olive brown fine grained SAND (SP) to SILTY SAND (SM).		5	X	59	+100	0 1047	▼ Water at 73.5 feet. Strong chemical odor.	
80	Becomes medium grained.		6	X	N.R	. +100	0 1112		•
	ject: DOUGLAS AIRCRAFT COMPANY ject No.: 8741863D	CONT	. L	OG	OF	BOR		WI.L.—.35	ig. -17

DEPTH (feet)	DESCRIPTION	WELL	No.	Type	Blow Count	0.V.A. (ppm)	Drilling Rate (T.)	REMARKS
85	(continued) Very dense, saturated, olive brown, fine to medium grained SAND (SP—SM) with some silt.						1205	Moderate to strong chemical odor.
90							1545	
95	Bottom of Boring at 92.0 feet.	+						Note: Used 59 gallons of city water to offset hydrostatic head of flowing sands during well installation.
100		+ + + + + + + + + + + + + + + + + + + +					·	
105	•	+						
110		+						
115-		+						
120-		† † †						
125		‡						
	ject: DOUGLAS AIRCRAFT COMPANY ject No.: 8741863D	CONT	. L	00	G OF	BOF		WCC-3S Fig. B-18



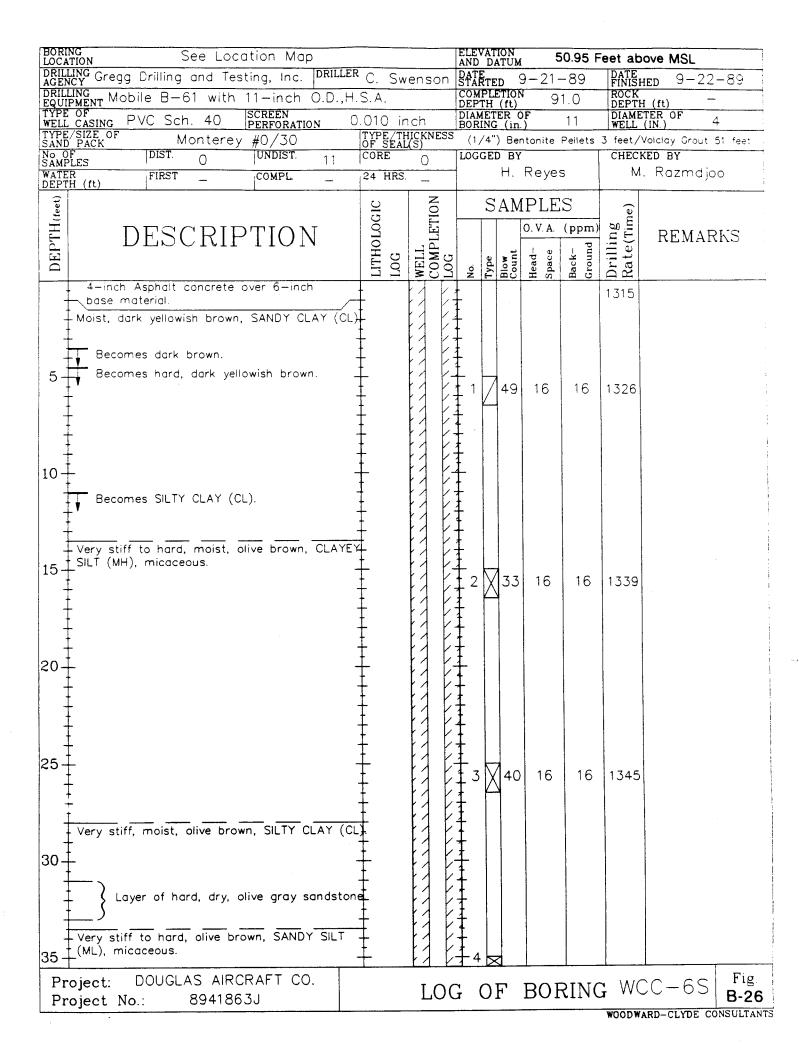
DEPTH (feet)	DESCRIPTION	WELL	No.	Type	Blow Count	O.V.A. (ppm)	Drilling Rate (T.)	REMARKS	
40									
45	. Very stiff, organic roots and plant detritus with arangish iron oxide staining.		1	X	18	8	1345	No odor.	
50								·	
55			2	X	23	8	1350	No odor.	
60	. Occasional fossiliferous gravel.								
65	Hard, light alive brown, fine SANDY SILT to SILTY fine SAND (SM).		3	X	43	5	1425	No odor.	
70-									
75-	Becomes wet. Hard, damp, light olive brown, SILTY CLAY (CL) with iron oxide staining.		4	X	42	7		∑ Water at 75 feet.	
	Very dense, light olive brown, fine grained SAND (SP) with little silt. 3 2 inch layer of CLAY (CL).		5	>	45	8	153	0 No odor.	F :c
	ject: DOUGLAS AIRCRAFT COMPANY eject No.: 8741863D	CONT	. L	00	O	F BOF	RING	WCC-4S	Fig. B-20

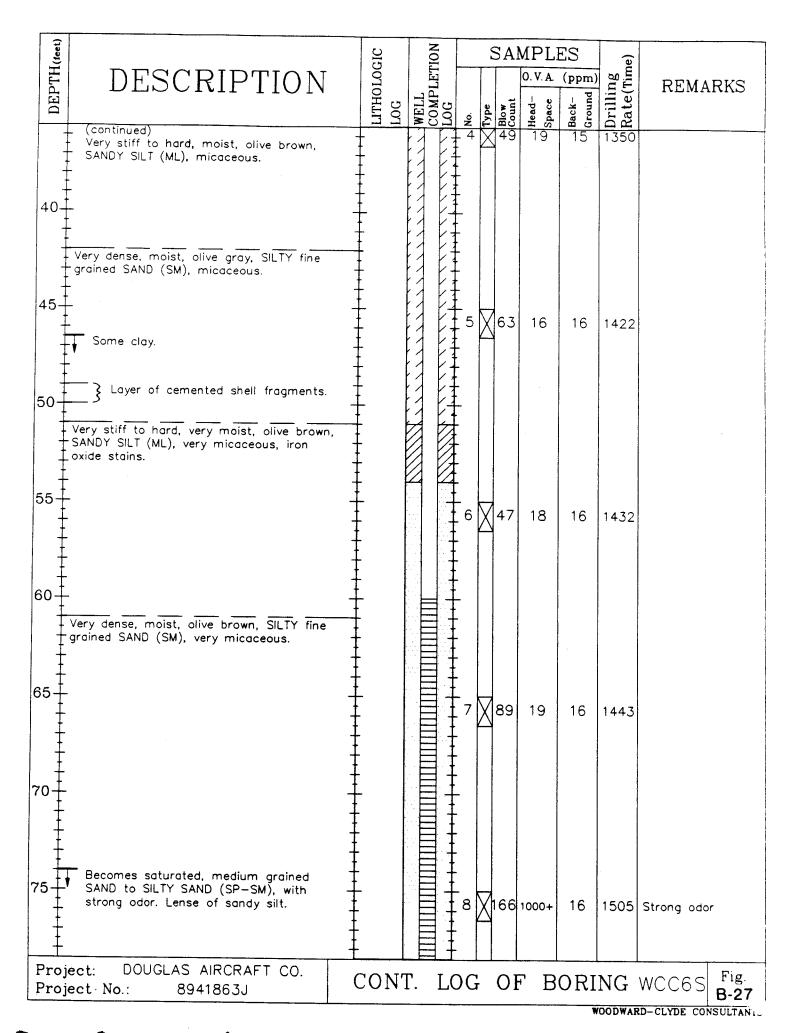
OEPTH (eet)	DESCRIPTION	WELL	ó	Type	Blow	O.V.A. (ppm)	Drilling Rate (T.)	REMARKS
85	(continued) Very dense, wet, light olive brown, fine grained SAND (SP) with little silt.							
90	- . Moist, light olive brown, SILTY CLAY (ML—CL		6	X	N.R.	8	1700	1
95-	Bottom of Boring at 91.5 feet.							Note: 45 gallons of city water used to offset hydrostatic head of flowing sands during well installation.
100-		† † † †						
105-		† • • • • • •					-	
110		† † †						
115		+						
120		+ + + + + + + + + + + + + + + + + + + +						
Pr	roject: DOUGLAS AIRCRAFT COMPANY roject No.: 8741863D	CON	IT.	LC	og o	OF BO		WCC-4S Fig. B-21

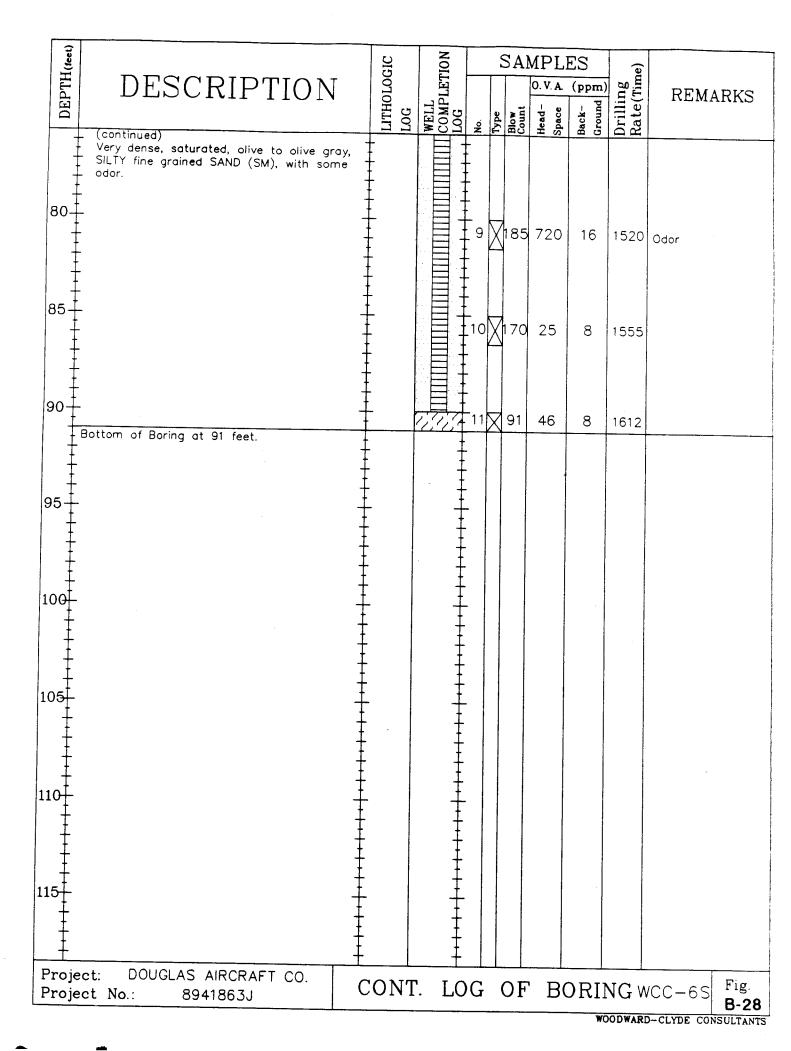


E	·		T	T	Γ -	T	Τ_	
DEPTH (feet)	DESCRIPTION	LOG	Š	Type	Blow Count	0.V.A. (ppm)	Drilling Rate (T.)	REMARKS
40	Moist, dark yellowish brown, SILTY CLAY (CL). (continued) with some organic roots and iron oxide staining.						1445	
45	Dense, moist, dusky yellow to light olive brown, fine grained, SAND (SP) with little silt.		1	X	34	3		No odor.
50								
55	Interbeds of Silty Sands and Clay.		2	X	37	5	1515	No odor.
60								
65	Becomes very dense.		3	X	70	4	1550	No odor.
70.	Becomes wet.							∑ Water at
	ense, wet, moderate olive brown, fine graine ILTY SAND (SM—ML).	ed.	4		35	3		73 feet. No odor.
Foies	t: DOUGLAS AIRCRAFT COMPANY							
	t No.: 8741863D	CONT.	LOC	}	OF	BORIN	1G	WCC-5 S Fig.
							WOOD	B-23/24

					_		,		
DEPTH	DESCRIPTION		WELL LOG	No.	Туре	Blow	0.V.A. (ppm)	Drilling Rate (T.)	REMARKS
85-	Dense, wet, moderate olive brown, fine SILTY SAND (SM-ML).	grained							
90-									No sample collected Augers sanding—in.
95	Bottom of Boring at 91 feet.	+							Note: 55 gallons of city water was used to aid well install—ation.
100		 	j						
105		† † †							
110									
115		† †							
20		‡ ‡							
25		† † † †							
rojec rojec	et: DOUGLAS AIRCRAFT COMPANY et No.: 8741863D	COI	NT.	LOG	. (DF E	L BORIN		WCC-5S Fig. B-25

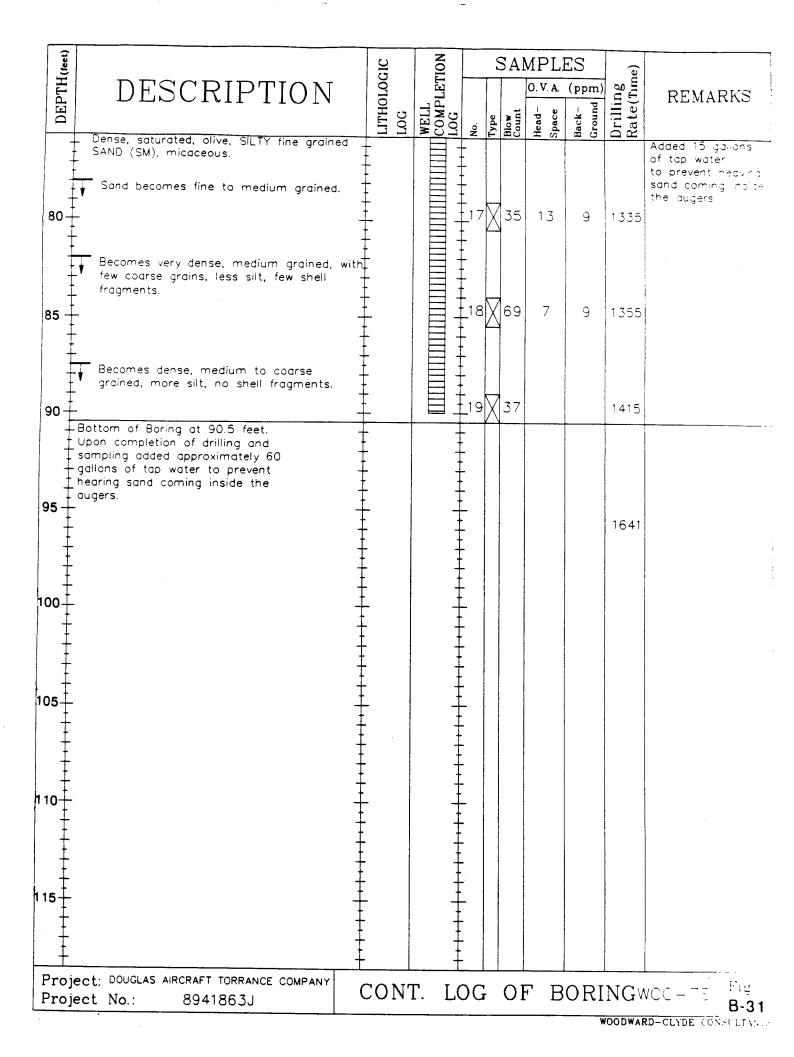






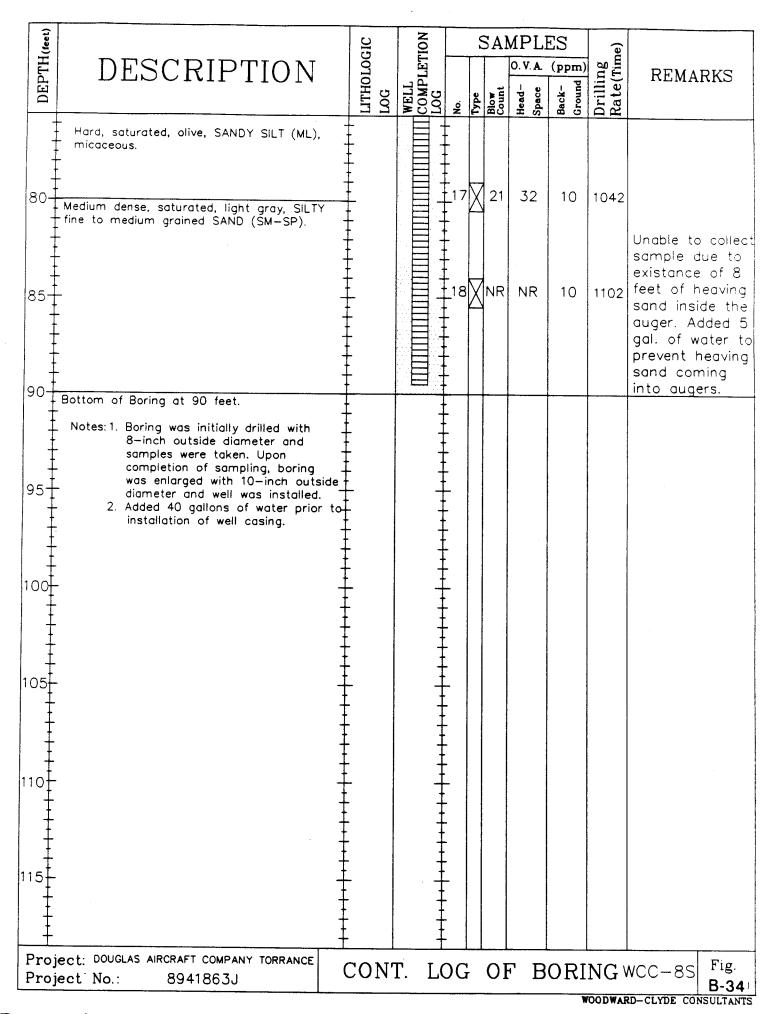
	ATION See LOCALITY Map			······		ELE	VAT D	NOI ATUM	á	48	3.29 1	feet MSL
DRIL	NCY A & R Drilling, Inc.		101. 110	mer		DAT STA			6-8-		DATE	
DRIL EQUI TYPE	IPMENT CME /3 WILH TO-INCH U.D., H.	S.	Α.			DEP	TH	ETIO (ft)	9	0.5	ROCK DEPT	H (ft) —
WELL	CASING PVC Sch. 40 PERFORATION	().01 – in			DIA) BOR	MET ING	ER (in	OF ı.)	10	DIAM! WELL	ETER OF 4
SAND	PACK Lonestar No. 0/30		TYPE/THOF SEAL	(S)	SS					ets 5 f		lay grout 49.0 ft.
No O SAMP WATE	R FIRST COMPL	·	CORE	0	_	LOG		D BY . G	r Haesm	nan		кер вү I. Razmdjoo
DEPT	H (ft) Finds _ COMPL _		24 HRS.	_					Reye		1VI	1. 1(42)11(4)00
DEPTH(feet)			25	WELL			S	AN	1PLE	S	(e)	
HI	DESCRIPTION		LITHOLOGIC	FI					O. V. A.	(ppm)	1g Fim	REMARKS
EP	DESCRIPTION		유	 ∃ E	, ,			۲,	- a	r– ind	llir Se (REMARNS
Ω			LOG	S S	3	Š	Type	Blow	Head- Space	Back- Ground	Drilling Rate(Time	
	6-inch Asphalt concrete, over 8-inch bas material.	se .		33								
	Hard, moist, black, SANDY CLAY (CL). Becomes dark yellowish brown.		_			_ 1	M	31	1	10	0913	
	becomes dark yellowish brown.	_	_	31		-						
	- -	-	 			-	Ц					
5 -	_	_	-	31	4	_2	X	45	1	10	0940	
1	<u> </u>	1				-						
‡	<u>-</u>	-	[-						;
‡	<u>.</u>	-	-	23		-						
1, 1	-	-	-		1	- 3	М	36	1	10	0051	
10+	- 	-	-	31	7	_)	Д	50	'	10	0951	
‡	- -	4	-		:/	-			.			
	Medim dense, moist, olive brown, SILTY fine		-	//	7	-						
Ŧ	grained SAND (SM).	1	-	21	4	•						
15	•	1	-		3	4	\bigvee	14	3	10	1002	
	-	7	-	//	7	- '	Д				.002	
]		21								
+		}	_		7							
‡	Becomes dark yellowish brown, with trace of clay, some decomposed roots.	e	_	21	1							
20#	-	_	-	31	1	_5	M	25	2	10	1009	
‡		‡	-	<i>[1</i>]	1							
‡		‡	-	31	4							
‡	Hood so sick deals alice beautiful for	_	-	33	1							
‡	Hard, moist, dark olive brown, fine grained SANDY CLAY (CL), with root holes.	‡	-		4	.						
25‡	-	+	-	31	4	_6	XI	31	2	10	1017	
Ŧ		†	· -	33	4							
\pm	Dense, moist, olive brown, SILTY fine grained	1	-	21	4							
Ŧ	SAND (SM).	- †	-	31	4	.						
‡		$\frac{1}{1}$	-	1	才		\forall			4.0		
30 ┼	•	$\frac{1}{2}$	-	31	4	- /	$oxed{egin{array}{c} oxed{\Delta} \end{array}}$	41	2	10	1058	
‡		1	-	33	7							
‡		†	<u>-</u>	21	汁	•						
‡		†	-	<i>[</i>]	#							
35 🕇	With root holes and small nodules of	†	-		1	8	abla	32	2	10	1105	
	calcium carbonate (HCL Reaction).		-	<u> </u>	1		\triangle					
	pject: DOUGLAS AIRCRAFT COMPANY TORRANCE			I.O	G	\mathcal{C}) F	ן י	ROR	ING	WC	C-7S Fig.
F 1 0	ject. No.: 8941863J				<u> </u>							B-29 RD-CLYDE CONSULTANTS

DEPTH(feet))IC	SAMPLES O.V.A. (ppm)								ES	(e)		
TH	DESCRIPTION	0[0]		LET	ľ				O. V.	A.		ng Tim	REMA	RKS
DEF	2 L 2 C T 1 T 1 T 1 T 1 T 1 T 1 T 1 T 1 T 1 T	LITHOLOGIC LOG	WELL	COMPI	507	No.	Type	Blow Count	Head-	Space	Back- Ground	Drilling Rate(Time)	TCD WITT	IVILO
	Dense, moist, olive brown, SILTY fine grained SAND (SM), with root holes and CaCo, nodul	es.	(1111			•								
40-	Medium dense, moist, dark brown to olive brown, medium grained SAND (SP).	+++++++++++++++++++++++++++++++++++++++	11111111111			_ 9	X	25	3		10	1112		
45	Dense, moist, olive brown, fine grained SAND to SILTY SAND (SP-SM).	+++++++++++++++++++++++++++++++++++++++	///////////////////////////////////////		1/	10	X	44	2		12	1123		
50	Zone of hard, damp, light brown, calcareoumaterial (sand and shell fragments)	+ + + + + + + + + + + + + + + + + + + +				11	∇	19	3		10	1134		
50-	-Very stiff, moist, olive, CLAY (CL), mixed with shell fragments and calcareous nodules (appears to be gouge zone). Dense, moist, olive, SILTY fine grained SAND	+ + + + + +				_ • •	Δ	13	,		Ü	1104		
55	-(SM)Hard, moist, olive, SANDY CLAY (CL), with some iron oxide stainingDense, moist, olive brown, SILTY fine grained	+ + + + + + + + +	<u> </u>		4	12	X	35	2		10	1148		
60	Dense, moist, olive gray, fine grained SAND (SP).	† + + + +				13	X	38	1		10	1201		
65	- -	† † † †				14	X	43	1		10	1214		
70	Dense, very moist, olive, SILTY fine grained SAND (SM), micaceous. Becomes saturated.	‡ + + + + +			+ + + + + + + + + + + + + + + + + + + +	15	X	44	3		10	1228		
75		+			1 1 1 1 1 1	16	X	44	9		10	1300		
•	ject: DOUGLAS AIRCRAFT COMPANY TORRANCE ject No.: 8941863J	CON'	Г.]	 LC)G		OI	7	B			NCC-7S	Fig.

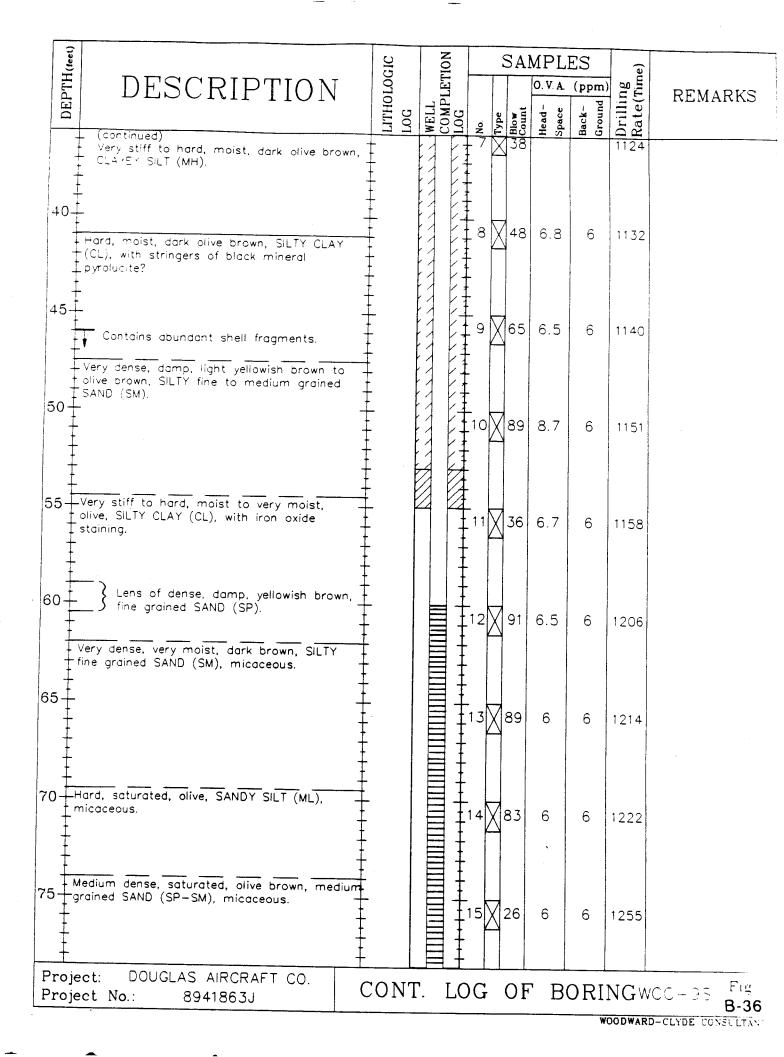


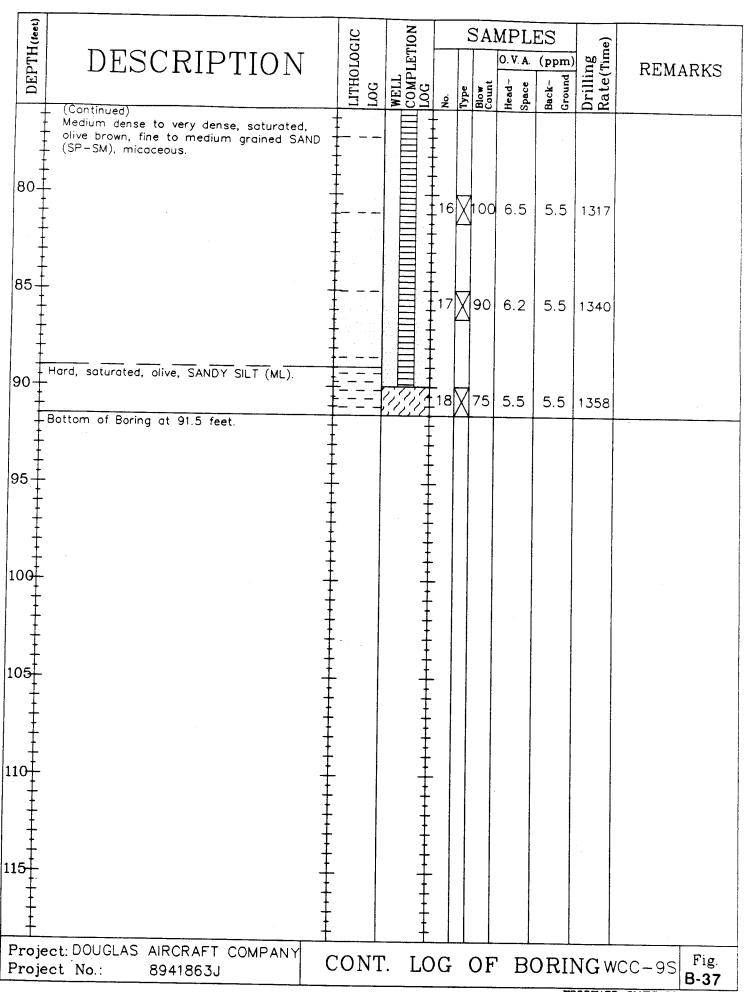
BOR	NG See Location Map		AND DATUM 50.56 feet MSL							
DRII AGE	LING A & R Driling, Inc. DRILLER	² М. R∢	omero	PAT			6-12		DATE	
EQU	LING CME 75 with 8 and 10—inch O.D.	,H.S.A.			(PL	CTIO		0.0	ROCK	
WEL	CASING Sch. 40 PVC SCREEN	0.01 — ir	ch	DIAI	MET	ER	OF	10		H (ft) ETER OF (IN) 4
SAN	PACK Lonestar No. 0/30	TYPE/TI	HICKNESS (S)	8		_				clay grout 49.5 ft.
	PLES DIST. O UNDÍST. 17	CORE	0	LOG	GEL	B)	7			KED BY
	R (ft) FIRST _ COMPL _	24 HRS	_		٢		laesm Reye		M	1. Razmdjoo
DEPTH(feet)		C	NC		S		IPLE			
H.	DESCRIPTION	LITHOLOGIC LOG	WELL COMPLETION LOG				O. V. A.		Drilling Rate(Time)	
PI	DESCRIPTION	101	L IPLI						lin e(T	REMARKS
		LOG	WEL COM	Ŏ.	Type	Blow	Head- Space	Back- Ground	ril Rat	
	8-inch Asphalt concrete.		77 7	-		ЩО	± α	В 5	0750	
	Base material, medium dense, moist, yellowish brown, CLAYEY SAND (SC), decomposed	F	[3]	- 1	\bigvee	12	0	11	0800	
	· \qranite. /	T L	3 3		Μ			1 f	0000	
-	Stiff, very moist, very dark gray, SANDY - CLAY (CL).	E	[4]	-						
5 -	Hard, moist, dark yellowish brown, SANDY CLAY to CLAYEY fine grained SAND (CL-	_		_ 2	M	55	13	11	0810	
_	- SC).	<u>-</u>		- ;	\vdash					
-	-	<u> </u>	3 3	-						
-	Hard, moist, olive brown, SILTY CLAY (CL).	<u>r</u> [14 14	-						_
-	-	_	13 T 3	-			7.0			
10 –	- -	-	<i>[4]</i> [4]	3	Δ	82	30	11	0819	
-	- -	-	3 3	-						
-	Medium dense, moist, olive brown, SILTY fine	-	3 3	-						
]	grained SAND (SM).	-		-						
15		-	33 13	4	∇	20	41	11	0823	
		-	44 14	-	4	_		, ,	3023	
‡		-	3 3			ļ			ŀ	
‡	Very stiff to hard, moist, olive brown, SILTY - CLAY (CL), with CaCo veinlets.	- -	<i>[4]</i> [4]	_						
+	(-	31 [3]	-		Ī				
20-		- -	<i>1</i> 4	_5	X	26	46	11	0830	
\pm	-	-	31 F3	.						
+	-	-	3 13	-		ĺ				
+	-	-	31 IA	-						
ر ا	December of the City TV C	-	3 3	6	╣.	33	24	11	0870	
25 +	Dense, moist, olive, SILTY fine grained SAND (SM-ML), with some iron oxide staining	-	31 B	- 0	Δ)		24	11	0839	
Ī	and hairlike root holes.		31 13			l	ļ			
‡	Hard, moist, dark olive brown, SANDY CLAY		往往							
‡	(CL), with caliche veinlets.		组组							
30 <i>‡</i>	_	_	往往	_7	XI:	32	21	11	0846	
‡	‡		31 14	. [4	ļ				
Ŧ	Dense, moist, olive brown, fine grained SAND	.]	往往	.				İ		
+	to SILTY SAND (SP-SM).		31 [3]							
<u>,</u> ‡	-	.	<i>{</i> <i> </i>		\exists	_	, ,			
35 +	Becomes more silty, grades to (SM)		<u> </u>	_႘	XI.	31	43	10	0855	
	ject: DOUGLAS AIRCRAFT COMPANY TORRANCE		T 0 0	^	 	т			\\/	C_8C Fig.
Pro	ject No.: 8941863J		LUG		ר	1	SUK			B-32
	·							1	WOODWA	RD-CLYDE CONSULTANTS

DEPTH(feet)		SIC	LOG WELL COMPLETION LOG No.					SAN	/PL	ES		ne)	
TH	DESCRIPTION)[O		E					O. V. A.			ing (Tin	REMARKS
DEP	DECOMM TION	ытногосіс гос	WELL	COMP		Ö.	lype	Blow Count	Head- Space	Back-	Ground	Drilling Rate(Time)	
	Dense, moist, olive brown, SILTY fine grained SAND (SM).		777										
+	<u>-</u> -	- -	1		4								
	<u>. </u>	-		1 [4	9	\forall	24	43		11	0904	
10 <u>-</u>	Stiff to very stiff, moist, olive brown, SANDY -SILT (ML).	- -	1/1/		生		4	_ '	+5		1	0304	
	Dense, moist, olive brown, SILTY fine grained -SAND (SM), with abundant calcareous nodules.	-			#								
	- -	-		1 }	往,	10	abla	31	46		0	0917	
15-	Hard, moist, olive, SILTY CLAY (CL), with iron-	<u>.</u>		1	生	'	Д) [+0		O	0917	
1	oxide staining and calcareous nodules.	-	1111		4								
1	Medium dense, moist to very moist, olive - gray and yellowish brown, mottled, CLAYEY	- -	1	1	#								
0-	grained SAND (SC).	-			#	11	X	13	48	1	10	0925	
+	- Dense, moist, olive brown, SILTY fine grained -	-			4								
1	SAND (SM), with abundant shell fragments which are cemented together forming coquing.				7								
1	which are cemented together forming coquina.	-		1 K	4	12	∇	43	72		10	0938	
5	<u>-</u> 	-			İ	12	\triangle	175	/2			0930	
+	<u>.</u> -	-			‡								
	<u>. </u>	-			Ŧ								
0		-			I	13	X	26	70		10	0950	
	(ML), micaceous, with iron oxide staining.	-		目	‡								
1	- Very dense, moist, light olive brown, SILTY -	-			1								
1	fine grained SAND (SM), micaceous.	-		目	‡								
5	<u>-</u>				+	14	X	83	100)	10	1003	
1	- , -			目	‡								
1	.· -	<u> </u>		目	‡								
<u>,</u>	Becomes very moist to saturated.	_		目	+	15	X	71	100		10	1015	
0-				目	1	•		4					
‡	· -	<u> </u>			Ŧ								
1	- - -	<u> </u>		目	İ								
5	Hard, saturated, olive, SANDY SILT (ML),	<u> </u>		目	+	16	X	38	100		10	1028	Becomes wet at 75 feet.
-	micaceous.	<u> </u>		目	+								
1	- -	F		目	Ŧ								
	ject: DOUGLAS AIRCRAFT COMPANY TORRANCE	CON	Т)	Ι.	<u> </u>	ŗ	\cap	F	RC)R	ING	WCC-8S Fig.
rc	oject . No.: 8941863J		1	•		_	_						RD-CLYDE CONSULTA



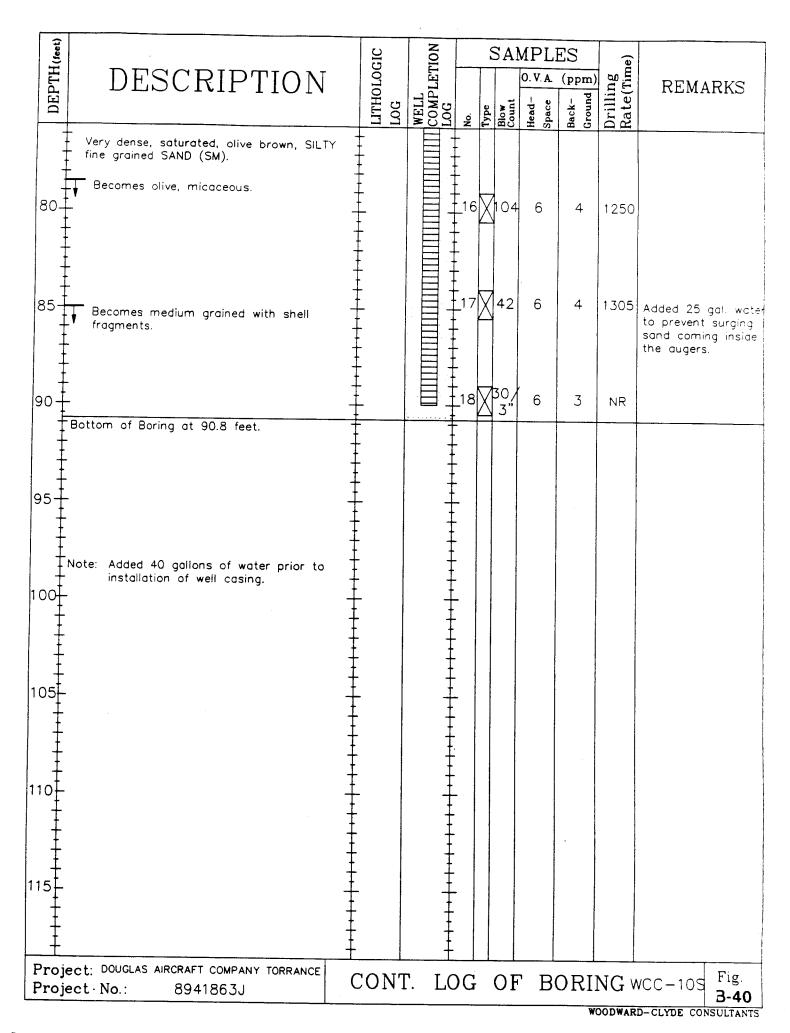
LOC	ATION See Location Map				ELEV	VATION DATU	——— М	47.01	Feet a	bove MSL
AGE	LING Gregg Drilling and Testing, Inc.	RILLER	C. S	wenson	DATI		9-20		DATE FINIS	HED 9-21-89
TYP	LING IPMENT Mobile B-61 with 11-inch, O				DEP"	PLETIC TH (ft)) =	1.5	ROCK	H (ft)
TYP	E OF L CASING PVC Sch. 40 SCREEN PERFORATION).010		BOR	IETER ING (ir	1.)	11	DIAMI	ETER OF 4
No	D PACK Monterey #0/30 DF DIST UNDIST.	1.0	OF SE	THICKNESS AL(S)	1000	(1/4") GED B	Bentoni	te Pelle		'Volclay Grout 51.5'
WAT	FIRST _ COMPL	1 <u>8</u> -	124 HR		LOGG		r Reye	S	1	кер вү 1. Razmdioo
	(10)									
DEPTH(feet)			LITHOLOGIC	PLETION		SAN	<u>APLE</u>		ne)	: :
PTI	DESCRIPTION		070) LE			O. V. A.	(ppm)	illing te(Time	REMARKS
DE			LITH			Type Blow Count	Head- Space	Back- Ground	Drilling Rate(Tim	
	4-inch Asphalt concrete over 6-inch		1 3	≥33 /1 [/	NO		S _P	Gr		
	base material.		<u> </u>						1036	
	Very stiff to hard, moist, dark yellowish SILTY CLAY (CL), with fine grained sand,	brown	,		-					
	micaceous.	-			-					
5 -	<u> </u>	_								
		-	_		_ 1 [X 45	6	6	1043	
					-					
-	-	-	-		-					
10-		-	-		-					
10	<u>.</u> -	_	<u> </u>	13 13	2	X 31	_	6	1051	
-	-	-	-		- K	Δ		_		
-	Stiff, moist, dark yellowish brown, CLAYE	, 	-	13 13	-					
-	SILT (MH), micaceous.	' - <u>-</u>	• -		-					
15 –	<u>-</u>	-	_		3	1,5	7	6	1050	
-	<u>-</u>	+	- -		- J	15	/	6	1058	
-		1	- -		-					
-	Becomes very stiff to hard.]	- -	13 13						
20-	-	+		13 14	_					
]	•	‡	<u>-</u>	131 131	. 4	X 34	7	6	1102	
4			• -		. [_				
+	Very stiff to hard, moist, dark brown to olive brown, SILTY CLAY (CL).	‡	<u>-</u>		.					
25	-	†	-	13 13						
~~		1	-	K) 13	5	43	6.6	6	1110	•
‡		‡	_	KI 13	.	4				
1	Very dense, moist, olive brown, SILTY fine		-	14 14						
	grained SAND (SM), with some clay veinle	ts. 🕇	-	[3] [3]	.					
30+	-	+	-	KA 13	6	80	6.9	_	4447	
Ī		+	•		. 6	$\Lambda_{\circ\circ}$	0.9	6	1117	
Ī		Ī		[3] [3]						
‡	Very stiff to hard, moist, dark olive brown	٦, +		KA KA						
35 +	CLAYEY SILT (MH).	‡	-	[4]	.7	d 9	6	6	1125	
	ject: DOUGLAS AIRCRAFT CO.			100		- · ·				C_QS Fig.
Pro	ject No.: 8941863J			LOG	U	r l	30 K	ING	VV ($\begin{array}{c c} C-9S & \text{Fig.} \\ \textbf{B-35} \end{array}$
•								٧	VOODWAR	D-CLYDE CONSULTANTS



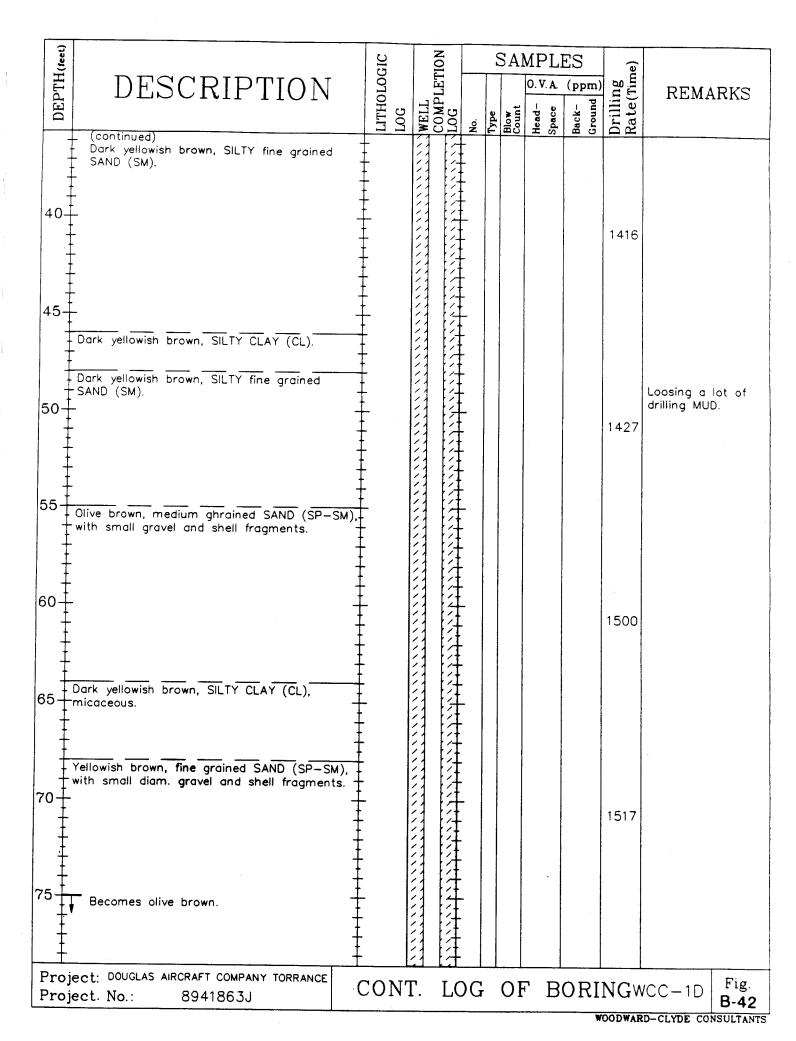


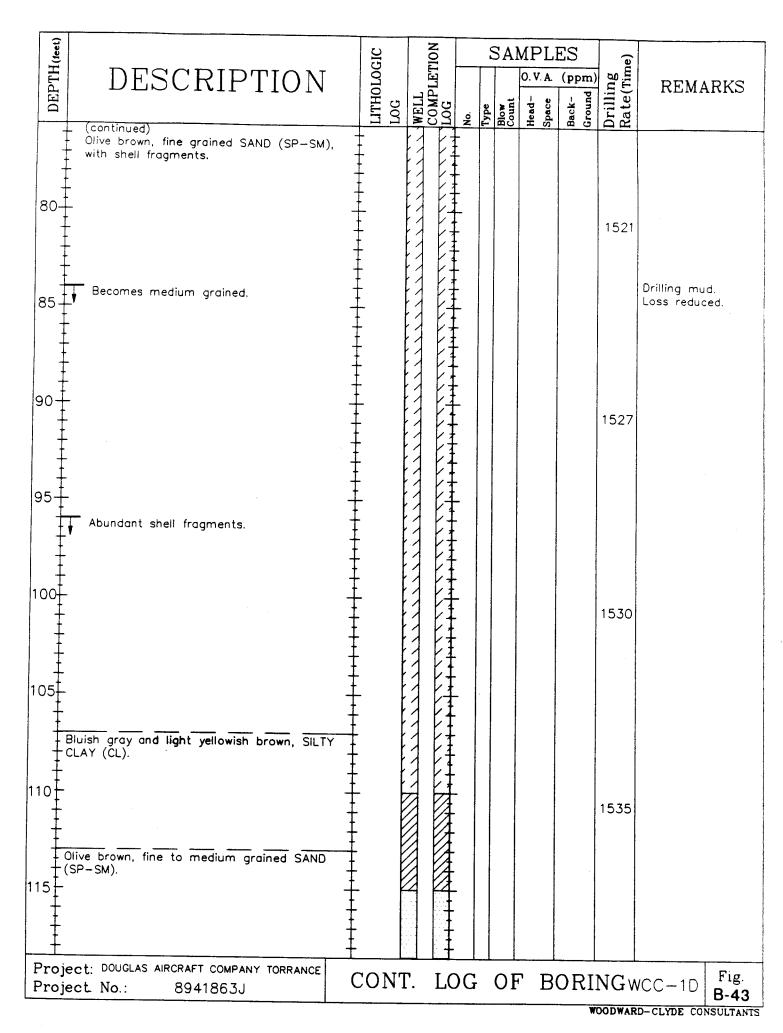
BOR	ING ATION See Location		ELE	VATI	ON		5	1 12	foot MSI		
DRIL AGE	LING A & R Driling, Inc.	DRILLEF	M. R	omero	COMPLETION OO 9 ROCK						
EQU	LING IPMENT CME 75 with 8—incl	o.D., H.S.				PLE	TIO		0.8	ROCK	<u> </u>
WELI	E OF L CASING PVC Sch. 40 PERI	CEN CORATION (). 01 — ir	nch	DIA) BOR	METE	ER (OF	10	DIAM	H (ft) ETER OF (IN.) 4
SANI	PACK Lonestar No.	0/30	TYPE/T OF SEA	HICKNESS L(S)	2010						Iclay grout 49 ft.
No C SAMI WATE	10	DIST. 18	CORE	0	LOG	GED	BY	7		CHEC	KED BY
DEPT	FIRST _ COI	MPL _	24 HRS				ь Н.	laesm Reye:	ian s	N	1. Razmdjoo
DEPTH(feet)			2	WELL COMPLETION LOG				IPLE		<u> </u>	
TH(DESCRIPTI	\cap N	LITHOLOGIC	ETI		П	-	O. V. A.		g	BELLIDIG
EP,		.UIV	유 ,	APL T			يد			llin e(T	REMARKS
D			LITT	COME	No.	Type	Blow	Head- Space	Back- Ground	Drilling Rate(Time	
	3 1/2—inch Asphalt concrete, base material.	over 9-inch		21 2	-			1	6	0954	
	Soft, very moist to saturated, b	ack, SANDY									
	CLAY (CL). Becomes very stiff, moist, do	rk yellowish	-		-						
	brown.	-	-		-						
5	<u></u>			[3] [4]	_ 1	χ_2	24	1	7	1000	•
	<u>-</u> -		-	13 13	-						
	Medium dense, moist, olive brown	n, SILTY fine	-		-					•	
1	grained SAND (SM), with trace o	f clay.	-	13 3	-						
10	-		_		_2	$\sqrt{1}$	3	1	7	1007	
+	· -	-	-	14 13		4					
+	No clay.	-	• -	13 13	-			ŀ			
<u> </u>	· · · · · · · · · · · · · · · · · · ·	+	-	[4]	-		ļ				
· - +		-	• - •			.	ا ۔		_		
15 +	-	+	- .		_3	$\sum_{i=1}^{2}$	25	2	7	1013	
Ŧ		†	•	13 13	-						
Ī		†	•	[3] [3]	•	Ì	Ì		İ		
‡		1	<u>-</u>	13 13							
20‡	N		-		4	$\sqrt{1}$	21	0	6	1017	
+	Very stiff to hard, moist, dark yes SANDY CLAY (CL).	ellowish brown,	-	14 14	.	4					
Ŧ	• •	‡	-	[3] [3]	.						
+			-	14 14	.						
ا با ج	Contains large nodules of calc	ium 🗍	•	3 3	ے ا	٦,					
25 +	carbonate (HCL Reaction).	+	-	13 13	5	Δľ°	51	0	6	1024	
Ī	,	†	•	3 3	.						
<u> </u>		‡	•	44 14				Ì			
‡	Dense, moist, olive brown, SILTY SAND (SM).	fine grained		组组							
30‡	(J).	+	_	往	6	X 3	6	1	6	1031	
Ŧ		‡		31 14	ľ	7				İ	
Ŧ		‡		组铁							
+7	Dense, moist, olive brown, fine gr	ained SAND		纠结							
35 +	to SILTY SAND (SP-SM).	+		31 IST	7	7~	2	2	۔ ا	1070	
				11 17	· ' /	7	2	2	6	1038	
•	ject: DOUGLAS AIRCRAFT COMPANY T ject [:] No.: 8941863J	ORRANCE		LOG	\cap	F	F	ROR	INC	WCC	$C-10S$ $\frac{\text{Fig.}}{\text{Pag.}}$
+ + 0,	Jeer 140 0341003J										B-38 RD-CLYDE CONSULTANTS
									,	・ひしいぜん	ND-CLIDE CONSULTANTS

DEPTH(feet)	DESCRIPTION	UTHOLOGIC JOG	T	(PLETION					(ppm)	Drilling Rate(Time)	REMARKS
IQ	Dense, moist, olive brown, fine grained	HTL1 HTC	WEL	COMPI	o N	Type	Blow	Head- Space	Back- Ground	Dril Rat	
40-	Dense to very dense, damp, pale brown, fine grained SAND (SP).	-			8	X	46	1	6	1045	
45	- - -	- - - - - -			- - 9 -	X	55	2	6	1054	
50-	Becomes olive brown.	-			- - 10	X	43	2	6	1106	
55	Dense, moist, olive brown, GRAVELLY medium grained SAND (SW), gravel 1/4"-1/2" diameter	-			_11	X	32	1	4	1115	
60	Very dense, moist, dark olive, CLAYEY fine grained SAND (SC). Very dense, moist, olive, SILTY fine grained SAND (SM).	- -			- _12 -	X	90	1	4	1136	
65-					_13	X	74	3	4	1141	
70	Becomes wet, olive brown.	-			14	X	51	NR	4	1203	
75-		-			15	X,	25	10	4	1215	
	ect: DOUGLAS AIRCRAFT COMPANY TORRANCE ect No.: 8941863J	CON	Γ.	L() G	1.	OF	r B	ORI	NG»	/CC-10S Fig. B-39

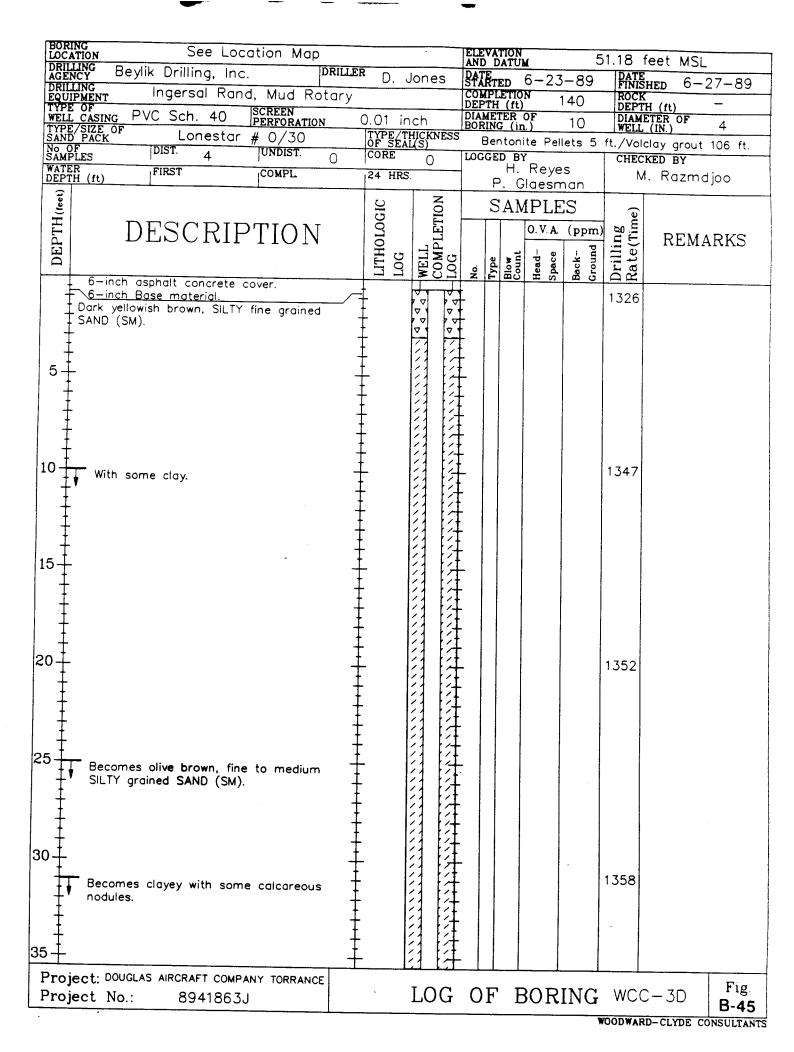


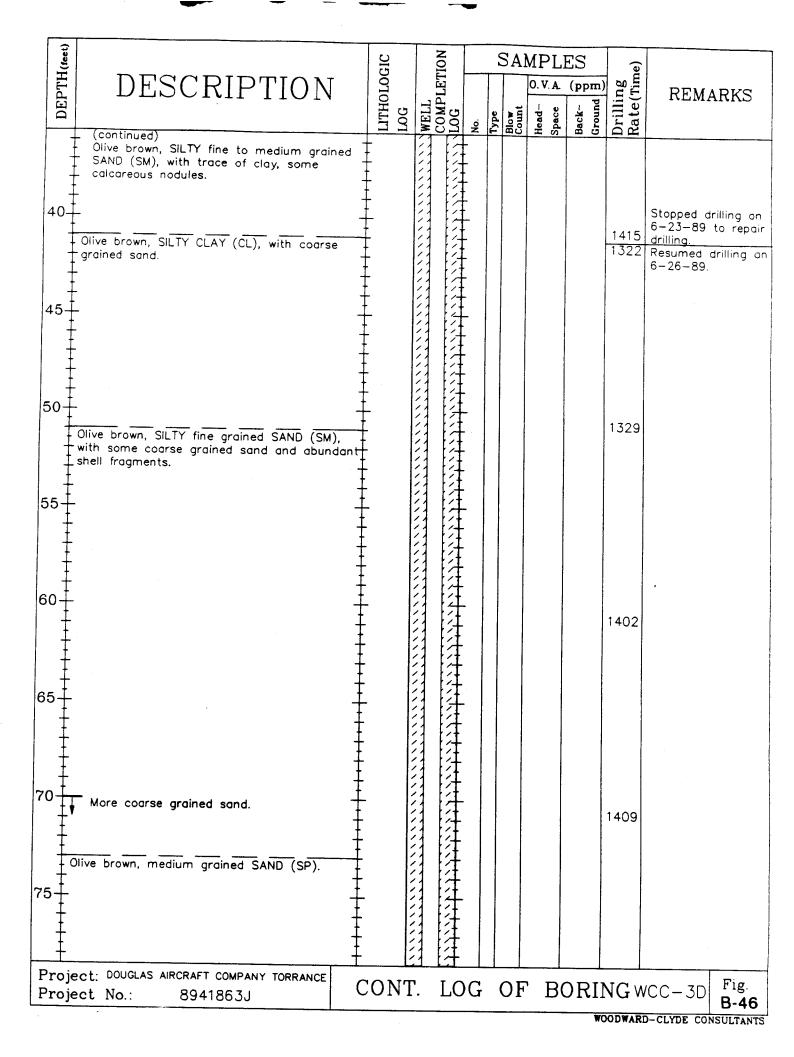
BOR	ING ATION		See	Locat	ion Map					EI	EV.	ATION DATU		5.	0.45	Feet MS	
	LING NCY	Beylik	Drilling		<u>'</u>	DRILLER	₹ [ones				<u>4</u> 6−28				·30-89
FOII	LING IPMENT		ngersal	Rand,	MUD R					CC	OMP	LETIO H (ft)	N	40	ROC	X	_
WEL	E OF L CASIN	ig PVC	Sch. 4 Lones	-O S	CREEN ERFORATIO	N (0.01	in	ch	DI	AME	TER IG (in	OF	10	DIAM	TH (ft) ETER OF (IN.)	4
SANI	E/SIZE D PACK	OF	Lones	star No	0/30				IICKNES (S)	S						iclay grou	
SAMI	ш.с		· · · · · · · · · · · · · · · · · · ·		UNDIST.	0	COR	E	0		GGI	ED BY	Reye		CHE	CKED BY	
DEP1	TH (ft)		FIRST		COMPL		24	HRS.				P. G	laesn	nan	١	M. Razm	djoo
DEPTH(feet)							2		WELL COMPLETION		2	SAN	(PLE	S			
TH		DE	7901	31Dr	ΓΙΟΝ	•	9		ETI			T	,	(ppm)	g m	D = 1.6	
EP		דר	1001	CIT	LIOIN		LITHOLOGIC	כא	WPI LI	-		يدا			llin e(1	REM	ARKS
							LIT	TOG	WE SO	3 3	Type	Blow Count	Head- Space	Back- Ground	Drilling Rate(Time)		
] -	6-1 ma	nch Asp terial.	hait conc	crete ove	er 6-inch	base .			∀ 	4					1235		
-	Dark	yellowish	n brown,	CLAYEY	fine grain er gravel.	ed _	_			7							
	ב שלואט ב	(3C), V	with Small	i diamet	er gravei.	-	‡		D	<u> </u>							
	-					-	Ē			4							
5-	-						-	-		\pm							
	•					-	-		<u> </u>	#					1303		
	- -					-				7							
										Ī							
10	· Dark -fine c	yellowish Irained s	i brown, i sand.	SILTY CL	AY (CL),	with _	-			\pm							
						1	-	l	<i>3</i> 1 B	4							
1 1	-					-	-		34	7							
	-	*					- -		31 [7							
15	•					+	-		24 E	+							
15	-					7	-			+					1308		
						†	-		31 B	;†					1300		
‡						I	-			Ŧ				,	٠		
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20+	-					‡	-			‡							
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+						‡	-			+							
25 ‡						‡	-			†						Stopped to repa	d drilling
~3 <u>T</u>						7	-	ľ		†					1313	rig.	ir uriii
‡						Ī	•			Ŧ				t			d drilling
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+						<u> </u>				Ŧ							
‡						‡				Ŧ			j				
Ī	Dark y	ellowish	brown, S	ILTY fine	e grained	SAND				‡				1			
35 I	(SM).					‡	_			İ							
	iect· i	DOUGL AS	AIRCRAFT	COMPAN	Y TORRANC				11.10	Ι	Ш						
	ject. ject			0863J	LORRANG	,			LOG	¦ (ЭF	F	30R	ING	WC	C-1D	Fig.
							 :										B-41

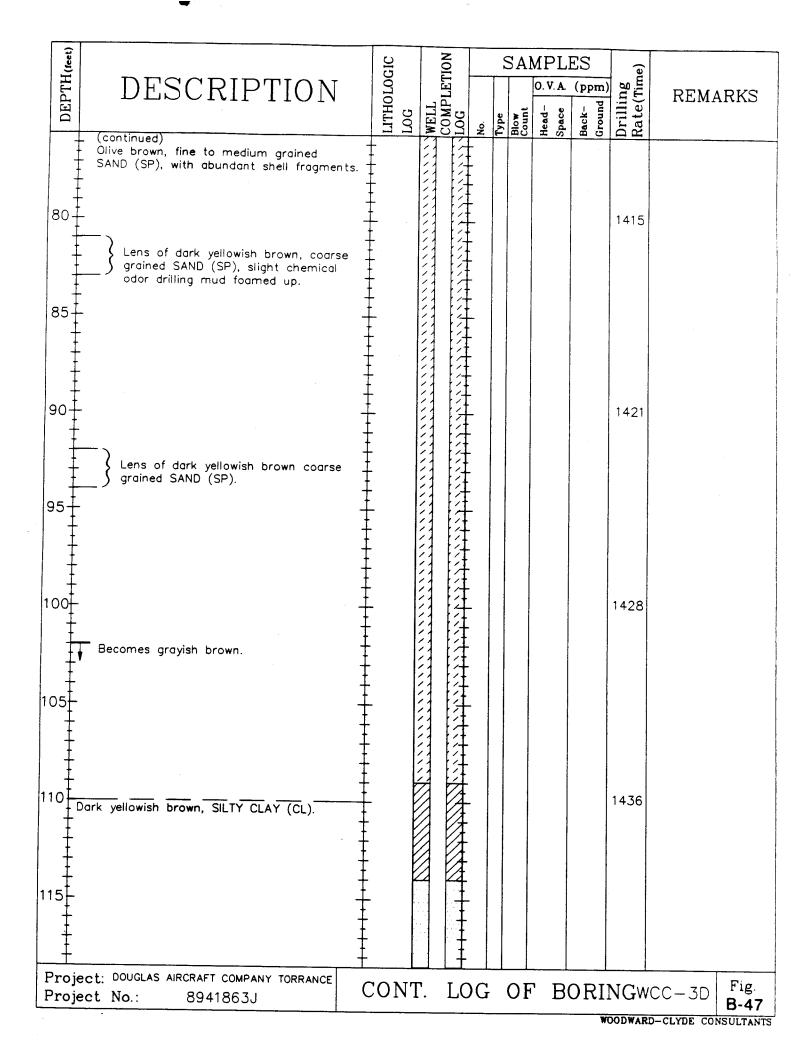


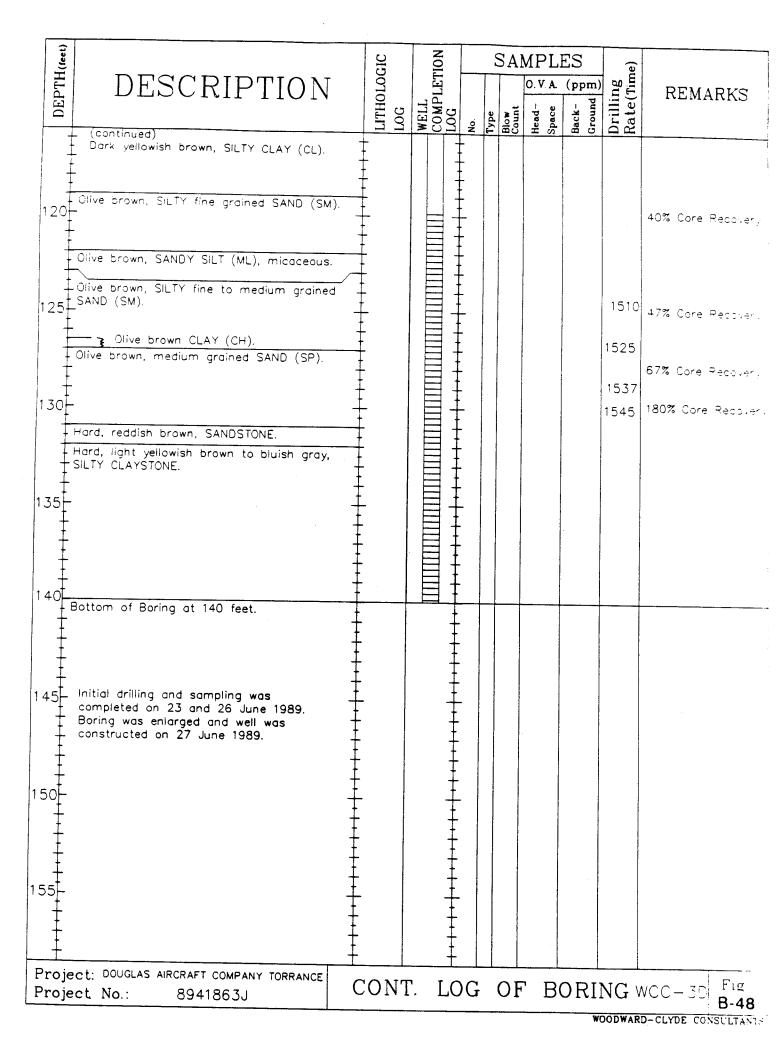


(feet)		CIC	ION		S	SAN	иРI	LES			
ΉTΉ(DESCRIPTION	070	LET				O. V. A	(ppn	<u>n</u> 8	REMA	RKS
DEPTH(seet)		LITHOLOGIC	WELL COMPLETION LOG	No.	Type	Blow	Head-	Back-	Drilling Rate(Time)		
- ; ;	Olive brown, fine to medium grained SAND (SP-SM).	+		 							
120	Hard, olive, SILT (ML), micaceous (SILTSTONE) Olive brown, medium grained SAND (SP).	7)							160	4	
-	- Moist, olive, SILT (ML), micaceous.	+		1						50% Core i	Recovery
125	Olive, SILTY fine grained SAND (SM).	† † †		† - -					161	•	
	Dark yellowish brown, medium grained - SAND (SP).	+		2						60% Core 6	Recovery
30	: - - -	† †		<u></u>					164	4 20% Core	Recovery
1	- - -	+ +		3							
35	-	+		 					170	1	
10	Dark yellowish brown, and bluish gray, SILTY -CLAY (CL).	‡ ‡ ‡		4		:			172	20% Core	Recovery
40	Bottomof Boring at 140 feet.	+	-	+					1 1 1 mm		
45	Initial drilling and sampling was completed on 28 June 1989. Boring was enlarged and well was constructed on 29 and 30	‡ + + +	-	† † † † †							
50	June 1989.	+	-	<u> </u>							
+		+	-	‡ + +							
55	• •	 	-	<u> </u>							
+		 	-	+							
	ject: DOUGLAS AIRCRAFT COMPANY TORRANCE ject No.: 8941863J	CON	T. L	00	, ,	0	F	BOF		WCC-1D	D-44









APPENDIX C

ANALYTICAL RESULTS

June 28, 1989

WOODWARD-CLYDE CONSULTANTS 203 N. Golden Circle Drive Santa Ana, CA 92705

Attn:

Dr. Alistaire Callender

JOB NO.

12944



MAL COUAL DEEMISIS

A

LABORATORY REPORT

Samples Received: Fifty-five (55) soils

Date Received: 6-13-89

Date Released for Analysis: 6-20-89

Purchase Order No: Proj#: 8941863J-Task 1/Douglas Aircraft Co.

The samples were analyzed as follows:

Samples Analyzed

<u>Analysis</u>

Results

Thirteen (13) soils

Halogenated and Aromatic

Volatile Organics by EPA 8010/8020

Data Sheets

Page 1 of 1

Shelley Stuart Senior Chemist

for D.J. Northington, Ph.D. Technical Director

Job No:

12944

Date

Analyzed: 25-Jun-89 Analysis: EPA 601/602 (8010/8020)

Sample: B-6-3-3

Matrix: Soil

Samp Amt: Dil Fact: 1 gm

10

Compound	Concentration mg/Kg	Detection Limits
Chloromethane	ND	0.005
Bromomethane	ND	0.005
Vinyl Chloride	ND	0.003
Chloroethane	ND	0.005
Methylene Chloride	0.053	0.025
1,1-Dichloroethylene	ND	0.003
1,1-Dichloroethane	0.011	0.002
trans-1,2-Dichloroethylene	ND	0.002
Trichlorofluoromethane	ND	0.002
Chloroform	ND	0.002
1,2-Dichloroethane	ND	0.002
1,1,1-Trichloroethane	0.016	0.002
Carbon Tetrachloride	ND	0.002
Bromodichloromethane	ND	0.002
1,1,2,2-Tetrachloroethane	ND	0.002
1,2-Dichloropropane	ND	0.002
trans-1,3-Dichloropropylene	ND	0.002
Trichloroethylene	ND	0.002
Dibromochloromethane	ND	0.002
1,1,2-Trichloroethane	ND	0.002
Benzene	ND	0.001
cis-1,3-Dichloropropylene	ND	0.002
2-Chloroethyl Vinyl Ether	ND	0.004
Bromoform	ND	0.003
Tetrachloroethylene	ND	0.002
Toluene	0.064	0.001
Chlorobenzene	ND	0.004
Ethylbenzene	0.001	0.001
Total Xylenes	0.009	0.001
1,3-Dichlorobenzene	ND	0.001
1,4-Dichlorobenzene	ND	0.001
1,2-Dichlorobenzene	ND	0.001

Date

12944

Job No:

Analyzed: 23-Jun-89 Analysis: EPA 601/602 (8010/8020)

Sample: B-6-5-3

Matrix: Soil

1 gm Samp Amt:

Dil Fact: 500

Compound	Concentration mg/Kg	Detection Limits
Chloromethane	ND	2.5
Bromomethane	ND	2.5
Vinyl Chloride	ND	1.5
Chloroethane	ИD	2.5
Methylene Chloride	ND	13
1,1-Dichloroethylene	ND	1.5
1,1-Dichloroethane	ND	1
trans-1,2-Dichloroethylene	ND	0.8
Trichlorofluoromethane	ND	1
Chloroform	ND	0.8
1,2-Dichloroethane	ND	1
1,1,1-Trichloroethane	12	0.8
Carbon Tetrachloride	ND	0.8
Bromodichloromethane	ND	0.8
1,1,2,2-Tetrachloroethane	ND	0.8
1,2-Dichloropropane	ND	0.8
trans-1,3-Dichloropropylene	ND	0.8
Trichloroethylene	45	0.8
Dibromochloromethane	ND	0.8
1,1,2-Trichloroethane	ND	0.8
Benzene	ND	0.5
cis-1,3-Dichloropropylene	ND	0.8
2-Chloroethyl Vinyl Ether	ND	2
Bromoform	ND	1.3
Tetrachloroethylene	ND	0.8
Toluene	1900	0.5
Chlorobenzene	ND	1.6
Ethylbenzene	51	0.5
Total Xylenes	390	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Job No: 12944

Date

Analyzed: 23-Jun-89

Analysis: EPA 601/602 (8010/8020)

Sample: B-6-7-3

Matrix: Soil

Samp Amt: Dil Fact: 1 gm 5000

Compound	Concentration mg/Kg	Detection Limits
Chloromethane	ND	25
Bromomethane	ND	25
Vinyl Chloride	ND	15
Chloroethane	ND	25
Methylene Chloride	ND	125
1,1-Dichloroethylene	ND	15
1,1-Dichloroethane	ND	10
trans-1,2-Dichloroethylene	ND	7.5
Trichlorofluoromethane	ND	10
Chloroform	ND	7.5
1,2-Dichloroethane	ND	10
1,1,1-Trichloroethane	ND	7.5
Carbon Tetrachloride	ND	7.5
Bromodichloromethane	ND	7.5
1,1,2,2-Tetrachloroethane	ND	7.5
1,2-Dichloropropane	ND	7.5
trans-1,3-Dichloropropylene	ND	7.5
Trichloroethylene	ND	7.5
Dibromochloromethane	ND	7.5
1,1,2-Trichloroethane	ND	7.5
Benzene	ND	5
cis-1,3-Dichloropropylene	ND	7.5
2-Chloroethyl Vinyl Ether	ND	20
Bromoform	ND	12.5
Tetrachloroethylene	ND	7.5
Toluene	48	5
Chlorobenzene	ND	25
Ethylbenzene	ND	5
Total Xylenes	21	5
1,3-Dichlorobenzene	ND	5
1,4-Dichlorobenzene	ND	5
1,2-Dichlorobenzene	ND	5

Job No:

12944

Date

Analyzed: 23-Jun-89

Analysis: EPA 601/602 (8010/8020)

Sample: B-6-7-4

Matrix: Soil

Samp Amt: Dil Fact: 1 gm 1000

Compound	Concentration mg/Kg	Detection Limits
Chloromethane	ND	5
Bromomethane	ND	5
Vinyl Chloride	ND	3
Chloroethane	ND	5
Methylene Chloride	ND	25
1,1-Dichloroethylene	ND	3
1,1-Dichloroethane	ND	2
trans-1,2-Dichloroethylene	ND	1.5
Trichlorofluoromethane	ND	2
Chloroform	ND	1.5
1,2-Dichloroethane	ND	2
1,1,1-Trichloroethane	ND	1.5
Carbon Tetrachloride	ND	1.5
Bromodichloromethane	ND	1.5
1,1,2,2-Tetrachloroethane	ND	1.5
1,2-Dichloropropane	ND	1.5
trans-1,3-Dichloropropylene	ND	1.5
Trichloroethylene	ND	1.5
Dibromochloromethane	ND	1.5
1,1,2-Trichloroethane	ND	1.5
Benzene	ND	1
cis-1,3-Dichloropropylene	ND	1.5
2-Chloroethyl Vinyl Ether	ND	4
Bromoform	ND	2.5
Tetrachloroethylene	ND	1.5
Toluene	19	1
Chlorobenzene	ND	5
Ethylbenzene	ND	1 .
Total Xylenes	6	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1

Job No:

12944

Date

Analyzed: 23-Jun-89 Analysis: EPA 601/602 (8010/8020)

Sample: B-6-9-3

Matrix: Soil

1 gm Samp Amt:

Dil Fact: 1000

Compound	Concentration mg/Kg	Detection Limits
Chloromethane	ND	5
Bromomethane	ND	5
Vinyl Chloride	ND	3
Chloroethane	ND	5
Methylene Chloride	ND	25
1,1-Dichloroethylene	ND	5
1,1-Dichloroethane	ND	2
trans-1,2-Dichloroethylene	ND	1.5
Trichlorofluoromethane	ND	2
Chloroform	ND	1.5
1,2-Dichloroethane	ND	2
1,1,1-Trichloroethane	59	1.5
Carbon Tetrachloride	ND	1.5
Bromodichloromethane	ND	1.5
1,1,2,2-Tetrachloroethane	ND	1.5
1,2-Dichloropropane	ND	1.5
trans-1,3-Dichloropropylene	ND	1.5
Trichloroethylene	23	1.5
Dibromochloromethane	ND	1.5
1,1,2-Trichloroethane	ND	1.5
Benzene	ND	1
cis-1,3-Dichloropropylene	ND	1.5
2-Chloroethyl Vinyl Ether	ND	4
Bromoform	ND	2.5
Tetrachloroethylene	ND	1.5
Toluene	320	1
Chlorobenzene	ND	5
Ethylbenzene	2.9	1
Total Xylenes	21	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1

Job No:

12944

Date

Analyzed: 23-Jun-89

Analysis: EPA 601/602 (8010/8020)

B-6-11-3 55 Sample:

Matrix: Soil

Samp Amt: Dil Fact: 0.1 gm

1

Compound	Concentration mg/Kg	Detection Limits
Chloromethane	ND	0.05
Bromomethane	ND	0.05
Vinyl Chloride	ND	0.03
Chloroethane	ND	0.05
Methylene Chloride	ND	0.25
1,1-Dichloroethylene	0.06	0.03
1,1-Dichloroethane	0.09	0.02
trans-1,2-Dichloroethylene	ND	0.02
Trichlorofluoromethane	ND	0.02
Chloroform	ND	0.02
1,2-Dichloroethane	ND	0.02
1,1,1-Trichloroethane	0.53	0.02
Carbon Tetrachloride	ND	0.02
Bromodichloromethane	ND	0.02
1,1,2,2-Tetrachloroethane	ND	0.02
1,2-Dichloropropane	ND	0.02
trans-1,3-Dichloropropylene	ND	0.02
Trichloroethylene	0.035	0.02
Dibromochloromethane	ND	0.02
1,1,2-Trichloroethane	ND	0.02
Benzene	ND	0.01
cis-1,3-Dichloropropylene	ND	0.02
2-Chloroethyl Vinyl Ether	ND	0.04
Bromoform	ND	0.03
Tetrachloroethylene	ND	0.02
Toluene	0.31	0.01
Chlorobenzene	ND	0.04
Ethylbenzene	ND	0.01
Total Xylenes	0.03	0.01
1,3-Dichlorobenzene	ND	0.01
1,4-Dichlorobenzene	ND	0.01
1,2-Dichlorobenzene	ND	0.01

Job No: 12944

Date

Matrix: Soil Analyzed: 23-Jun-89 Samp Amt:

1 gm Analysis: EPA 601/602 (8010/8020) 1000 Dil Fact:

Compound	Concentration mg/Kg	Detection Limits
Chloromethane	иD	5
Bromomethane	ND	5
Vinyl Chloride	ND	3
Chloroethane	ND ND	5
Methylene Chloride	ND	25
1,1-Dichloroethylene	ND	3
1,1-Dichloroethane	ND	2
trans-1,2-Dichloroethylene	ND	1.5
Trichlorofluoromethane	ND	2
Chloroform	ND	1.5
1,2-Dichloroethane	ND	2
1,1,1-Trichloroethane	7.7	1.5
Carbon Tetrachloride	ND	1.5
Bromodichloromethane	ND	1.5
1,1,2,2-Tetrachloroethane	ND	1.5
1,2-Dichloropropane	ND	1.5
trans-1,3-Dichloropropylene	ND	1.5
Trichloroethylene	ND	1.5
Dibromochloromethane	ND	1.5
1,1,2-Trichloroethane	ND	1.5
Benzene	ND	1.3
cis-1,3-Dichloropropylene	ND	1.5
2-Chloroethyl Vinyl Ether	ND	4
Bromoform	ND	2.5
Tetrachloroethylene	ND	1.5
Toluene	9.9	1.3
Chlorobenzene	ND .	4
Ethylbenzene	ND	1
Total Xylenes	2.9	i
1,3-Dichlorobenzene	ND ND	i
1,4-Dichlorobenzene	ND	i
1,2-Dichlorobenzene	ND	i
T'S DIGHTOT OPENSENE	1470	-

ND-Not Detected. The limit of detection is reported above.

(, s '

Sample: B-6-13-3

Job No:

12944

Date

Analyzed: 25-Jun-89

Analysis: EPA 601/602 (8010/8020)

Sample: B-7-7-3

Matrix: Soil

Samp Amt: 1 gm

Dil Fact: 40

Compound	Concentration mg/Kg	Detection Limits
Chloromethane	 ND	0.2
Bromomethane	ND	0.2
Vinyl Chloride	ND	0.2
Chloroethane	ND	0.2
Methylene Chloride	ND	1
1,1-Dichloroethylene	ND	0.12
1,1-Dichloroethane	ND	0.08
trans-1,2-Dichloroethylene	ND	0.06
Trichlorofluoromethane	ND	0.08
Chloroform	ND	0.06
1,2-Dichloroethane	ND	0.08
1,1,1-Trichloroethane	0.15	0.06
Carbon Tetrachloride	ND	0.06
Bromodichloromethane	ND	0.06
1,1,2,2-Tetrachloroethane	ND	0.06
1,2-Dichloropropane	ND	0.06
trans-1,3-Dichloropropylene	ND	0.06
Trichloroethylene	0.09	0.06
Dibromochloromethane	ND	0.06
1,1,2-Trichloroethane	ND	0.06
Benzene	ND	0.04
cis-1,3-Dichloropropylene	ND	0.06
2-Chloroethyl Vinyl Ether	ИD	0.2
Bromoform	ND	0.1
Tetrachloroethylene	ND	0.06
Toluene	1.7	0.04
Chlorobenzene	ND	0.33
Ethylbenzene	ND	0.04
Total Xylenes	0.09	0.04
1,3-Dichlorobenzene	ND	0.08
1,4-Dichlorobenzene	ND	0.08
1,2-Dichlorobenzene	ND	0.08

WOODWARD CLYDE CONSULTANTS Client:

Job No:

12944

Date

Analyzed: 25-June-89

Analysis: EPA 601/602 (8010/8020)

Sample: B-7-8-3

Matrix: Soil

1 gm

Samp Amt: Dil Fact: 1000

Compound	Concentration mg/Kg	Detection Limits
Chloromethane	ND	5
Bromomethane	ND	5
Vinyl Chloride	ND	3
Chloroethane	ND	5
Methylene Chloride	ND	25
1,1-Dichloroethylene	ND	3
1,1-Dichloroethane	ND	2
trans-1,2-Dichloroethylene	ND	1.5
Trichlorofluoromethane	ND	2
Chloroform	ND	1.5
1,2-Dichloroethane	ND	2
1,1,1-Trichloroethane	ND	1.5
Carbon Tetrachloride	ND	1.5
Bromodichloromethane	ND	1.5
1,1,2,2-Tetrachloroethane	ND	1.5
1,2-Dichloropropane	ND	1.5
trans-1,3-Dichloropropylene	ND	1.5
Trichloroethylene	ND	1.5
Dibromochloromethane	ND	1.5
1,1,2-Trichloroethane	ND	1.5
Benzene	ND	1
cis-1,3-Dichloropropylene	ND	1.5
2-Chloroethyl Vinyl Ether	ND	4
Bromoform	ND	2.5
Tetrachloroethylene	ND	1.5
Toluene	ND	1
Chlorobenzene	ND	5
Ethylbenzene	ND	5 1 1
Total Xylenes	1	
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1

Client: WOODWARD-CLYDE CONSULTANTS

Job No:

12944

Date

Analyzed: 25-Jun-89

Analysis: EPA 601/602 (8010/8020)

B-7-9-3 Sample:

Matrix: Soil

Samp Amt: Dil Fact: 1000

1 gm

Compound	Concentration mg/Kg	Detection Limits
Chloromethane	ND	5
Bromomethane	ND	5
Vinyl Chloride	ND	3
Chloroethane	ND	5
Methylene Chloride	ND	25
1,1-Dichloroethylene	ND	3
1,1-Dichloroethane	ND	2
trans-1,2-Dichloroethylene	ND	1.5
Trichlorofluoromethane	ND	2
Chloroform	ND	1.5
1,2-Dichloroethane	ND	2
1,1,1-Trichloroethane	10	1.5
Carbon Tetrachloride	ND	1.5
Bromodichloromethane	ND	1.5
1,1,2,2-Tetrachloroethane	ND	1.5
1,2-Dichloropropane	ND	1.5
trans-1,3-Dichloropropylene	ND	1.5
Trichloroethylene	ND	1.5
Dibromochloromethane	ND	1.5
1,1,2-Trichloroethane	ND	1.5
Benzene	ND	1
cis-1,3-Dichloropropylene	ND	1.5
2-Chloroethyl Vinyl Ether	ND	4
Bromoform	ND	2.5
Tetrachloroethylene	ND	1.5
Toluene	40	1
Chlorobenzene	ND	1.1
Ethylbenzene	ND	1
Total Xylenes	1	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1

Client: WOODWARD-CLYDE CONSULTANTS

Job No:

12944

Date

Analyzed: 25-Jun-89 Analysis: EPA 601/602 (8010/8020) Sample: B-7-9-4

Matrix: Soil

Samp Amt: 1 gm Dil Fact: 1000

Compound	Concentration mg/Kg	Detection Limits ====================================
Chloromethane	ND	5
Bromomethane	ND	5
Vinyl Chloride	ND	3
Chloroethane	ND	5
Methylene Chloride	ND	25
1,1-Dichloroethylene	ND	3
1,1-Dichloroethane	ND	2
trans-1,2-Dichloroethylene	ИD	1.5
Trichlorofluoromethane	ND	2
Chloroform	ND	1.5
1,2-Dichloroethane	ND	2
1,1,1-Trichloroethane	12	1.5
Carbon Tetrachloride	ND	1.5
Bromodichloromethane	ND	1.5
1,1,2,2-Tetrachloroethane	ND	1.5
1,2-Dichloropropane	ND	1.5
trans-1,3-Dichloropropylene	ND	1.5
Trichloroethylene	ND	1.5
Dibromochloromethane	ND	1.5
1,1,2-Trichloroethane	ND	1.5
Benzene	ND	1
cis-1,3-Dichloropropylene	ND	1.5
2-Chloroethyl Vinyl Ether	ND	4
Bromoform	ND	2.5
Tetrachloroethylene	ND	1.5
Toluene	25	1
Chlorobenzene	ND	8.3
Ethylbenzene	ND	1
Total Xylenes	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1

Client: WOODWARD-CLYDE CONSULTANTS

Job No: 12944

Date

Matrix: Soil Analyzed: 25-Jun-89

Analysis: EPA 601/602 (8010/8020)

Samp Amt: 1 gm Dil Fact: 1000

Sample: B-7-11-3

Compound	Concentration mg/Kg	Detection Limits
Chloromethane	ND	5
Bromomethane	ND	5
Vinyl Chloride	ND	3
Chloroethane	ND	5
Methylene Chloride	ND	25
1,1-Dichloroethylene	57	3
1,1-Dichloroethane	ND	2
trans-1,2-Dichloroethylene	ND	1.5
Trichlorofluoromethane	ND	2
Chloroform	ND	1.5
1,2-Dichloroethane	ND	2
1,1,1-Trichloroethane	880	1.5
Carbon Tetrachloride	ND	1.5
Bromodichloromethane	ND	1.5
1,1,2,2-Tetrachloroethane	ND	1.5
1,2-Dichloropropane	ND	1.5
trans-1,3-Dichloropropylene	ND	1.5
Trichloroethylene	ND	1.5
Dibromochloromethane	ND	1.5
1,1,2-Trichloroethane	4	1.5
Benzene	ND	1
cis-1,3-Dichloropropylene	ND	1.5
2-Chloroethyl Vinyl Ether	ND	4
Bromoform	ND	2.5
Tetrachloroethylene	ND	1.5
Toluene	41	1
Chlorobenzene	ND	8.3
Ethylbenzene	ND	1
	1.7	
Total Xylenes	ND ND	1 1 1
1,3-Dichlorobenzene	ND	ī
1,4-Dichlorobenzene	ND ND	ī
1,2-Dichlorobenzene	ND	•

Client: WOODWARD CLYDE CONSULTANTS

Job No:

12944

Date

Analyzed: 26-JUNE-89 Analysis: EPA 601/602 (8010/8020)

Sample: B-7-13-3

Matrix: Soil

1 gm

Samp Amt: Dil Fact: 50

Compound	Concentration mg/Kg	Detection Limits
Chloromethane	ND	250
Bromomethane	ND	250
Vinyl Chloride	ND	150
Chloroethane	ND	250
Methylene Chloride	20000	1250
1,1-Dichloroethylene	600	150
1,1-Dichloroethane	ND	100
trans-1,2-Dichloroethylene	ND	75
Trichlorofluoromethane	ND	100
Chloroform	ND	75
1,2-Dichloroethane	ND	100
1,1,1-Trichloroethane	59000	75
Carbon Tetrachloride	ND	75
Bromodichloromethane	ND	75
1,1,2,2-Tetrachloroethane	ND	75
1,2-Dichloropropane	ND	75
trans-1,3-Dichloropropylene	ND	75
Trichloroethylene	ND	75
Dibromochloromethane	ND	75
1,1,2-Trichloroethane	ND	75
Benzene	ND	50
cis-1,3-Dichloropropylene	ND	75
2-Chloroethyl Vinyl Ether	ND	200
Bromoform	ND	125
Tetrachloroethylene	140	75
Toluene	450	50
Chlorobenzene	ND	300
Ethylbenzene	ND	50
Total Xylenes	ND	50
1,3-Dichlorobenzene	ND	100
1,4-Dichlorobenzene	ND	100
1,2-Dichlorobenzene	ND	100



CHAIN OF CUSTODY RECORD

SHIPMENT	NO.:_4
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PAGE 2 OF 3

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CHAIN OF CUSTODY RECORD

SHIPMENT NO .: 7 PAGE / OF 3

DATE 6/13/89

	PROJ	ECT N	AME:	10	GLAS	_AIR	CRAFT C	W	wy		•	<u> </u>		
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* Note - This does not constitute authorization to proceed with analysis



CHAIN OF CUSTODY RECORD

SHIPMENT NO.: 4

PAGE 3 OF 3

DATE 6 /13/89

PROJECT NAME:_	DOULLAS	ARCOAFT	COMPSHY
PROJECT NO.:	841868	1- TASK!	•

Sample Number	Location			Type of Container				
		Material	Method		Temp	Chemical	 _	
R-7-7-4	8-7	Sol	MOD.	BRASS TUBS	KE	10/15	CONTAC	\mathcal{X} :
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								1
Company Reason								

* Note - This does not constitute authorization to proceed with analysis

RECEIVED

June 30, 1989

JUL Q B 1903 WCC-SANTA

> **WEST COAST ANALYTICAL** SERVICE, INC.

ANALYTICAL CHEMISTS

Α

Attn:

Dr. Alistaire Callender

JOB NO.

12962

WOODWARD-CLYDE CONSULTANTS

203 N. Golden Circle Drive

Santa Ana, CA 92705

LABORATORY REPORT

Samples Received: Fifty-six (56) soils

Date Received: 6-15-89

Date Released for Analysis: 6-20-89

Purchase Order No: Proj#: 8941863J/Task 1-Douglas Aircraft

The samples were analyzed as follows:

Samples Analyzed

<u>Analysis</u>

Results

Eight (8) soils

Halogenated and Aromatic

Volatile Organics by EPA 8010/8020

Data Sheets

Page 1 of 1

Shelley Stuart

Senior Chemist

D.J. Northington, Ph.D. Technical Director

9840 Alburtis Avenue • Santa Fe Springs, California 90670 • 213/948-2225

Client: WOODWARD CLYDE CONSULTANTS Sample: B-8-10-3

Job No: 12962

Date Matrix: Soil

Analyzed: 28-JUNE-89 Samp Amt: 0.1 gm Analysis: EPA 601/602 (8010/8020) Dil Fact: 1

Compound	Concentration mg/Kg	Detection Limits
Chloromethane	ND	0.05
Bromomethane	ND	0.05
Vinyl Chloride	ND	0.03
Chloroethane	ND	0.05
Methylene Chloride	ND	0.25
1,1-Dichloroethylene	ND	0.03
1,1-Dichloroethane	ND	0.02
trans-1,2-Dichloroethylene	ND	0.02
Trichlorofluoromethane	ND	0.02
Chloroform	ND	0.02
1,2-Dichloroethane	ND	0.02
1,1,1-Trichloroethane	ND	0.02
Carbon Tetrachloride	ND	0.02
Bromodichloromethane	ND	0.02
1,1,2,2-Tetrachloroethane	ND	0.02
1,2-Dichloropropane	ND	0.02
trans-1,3-Dichloropropylene	ND	0.02
Trichloroethylene	ND	0.02
Dibromochloromethane	ND	0.02
1,1,2-Trichloroethane	ND	0.02
Benzene	ND	0.01
cis-1,3-Dichloropropylene	ND	0.02
2-Chloroethyl Vinyl Ether	ND	0.04
Bromoform	ND	0.03
Tetrachloroethylene	ND	0.02
Toluene	0.27	0.01
Chlorobenzene	ND	0.01
Ethylbenzene	ND	0.01
Total Xylenes	ND	0.01
1,3-Dichlorobenzene	ND	0.01
1,4-Dichlorobenzene	ND	0.01
1,2-Dichlorobenzene	ND	0.01

Client: WOODWARD CLYDE CONSULTANTS

Job No: 12962

Date

Analyzed: 28-JUNE-89

Analysis: EPA 601/602 (8010/8020)

Sample: B-8-11-3

Matrix: Soil

Samp Amt: 0.1 gm Dil Fact: 1

Compound	Concentration mg/Kg	Detection Limits
Chloromethane	ND	0.05
Bromomethane	ND	0.05
Vinyl Chloride	ND	0.03
Chloroethane	ND	0.05
Methylene Chloride	ND	0.25
1,1-Dichloroethylene	ND	0.03
1,1-Dichloroethane	ND	0.02
trans-1,2-Dichloroethylene	ND	0.02
Trichlorofluoromethane	ND	0.02
Chloroform	ND	0.02
1,2-Dichloroethane	ND	0.02
1,1,1-Trichloroethane	ND	0.02
Carbon Tetrachloride	ND	0.02
Bromodichloromethane	ND	0.02
1,1,2,2-Tetrachloroethane	ND	0.02
1,2-Dichloropropane	ND	0.02
trans-1,3-Dichloropropylene	ND	0.02
Trichloroethylene	ND	0.02
Dibromochloromethane	ND	0.02
1,1,2-Trichloroethane	ND	0.02
Benzene	ND	0.01
cis-1,3-Dichloropropylene	ND	0.02
2-Chloroethyl Vinyl Ether	ND	0.04
Bromoform	ND	0.03
Tetrachloroethylene	ND	0.02
Toluene	0.04	0.01
Chlorobenzene	ND	0.01
Ethylbenzene	ND	0.01
Total Xylenes	ND	0.01
1,3-Dichlorobenzene	ND	0.01
1,4-Dichlorobenzene	ND	0.01
1,2-Dichlorobenzene	ND	0.01

Client: WOODWARD-CLYDE CONSULTANTS

Job No:

12962

Date

Analyzed: 28-Jun-89

Analysis: EPA 601/602 (8010/8020)

Sample: B-8-12-3

Matrix: Soil

Samp Amt: 0.1 qm Dil Fact:

Concentration Detection Compound Limits mg/Kg _____ Chloromethane ND 0.05 Bromomethane ND 0.05 Vinyl Chloride ND 0.03 Chloroethane ND 0.05 Methylene Chloride ND 0.25 1,1-Dichloroethylene ND 0.03 1,1-Dichloroethane ND 0.02 trans-1,2-Dichloroethylene ND 0.02 Trichlorofluoromethane ND 0.02 Chloroform ND 0.02 1,2-Dichloroethane ND 0.02 1,1,1-Trichloroethane 0.12 0.02 Carbon Tetrachloride ND 0.02 Bromodichloromethane ND 0.02 1,1,2,2-Tetrachloroethane ND 0.02 1,2-Dichloropropane ND 0.02 trans-1,3-Dichloropropylene ND 0.02 Trichloroethylene ND 0.02 Dibromochloromethane ND 0.02 1,1,2-Trichloroethane ND 0.02 Benzene ND 0.01 cis-1,3-Dichloropropylene ND 0.02 2-Chloroethyl Vinyl Ether ND 0.04 Bromoform ND 0.03 Tetrachloroethylene ND 0.02 Toluene 0.06 0.01 Chlorobenzene ND 0.07 Ethylbenzene ND 0.01 Total Xylenes ND 0.01 1,3-Dichlorobenzene ND 0.01 1,4-Dichlorobenzene ND 0.01 1,2-Dichlorobenzene

ND-Not Detected. The limit of detection is reported above.

ND

0.01

Client: WOODWARD-CLYDE CONSULTANTS Sample: B-8-13-3

Job No: 12962

Date Matrix: Soil

Analyzed: 28-Jun-89 Samp Amt: 0.1 gm Analysis: EPA 601/602 (8010/8020) Dil Fact: 1

Compound	Concentration mg/Kg	Detection Limits
Chloromethane	ND	0.05
Bromomethane	ND	0.05
Vinyl Chloride	ND	0.03
Chloroethane	ND	0.05
Methylene Chloride	ND	0.25
1,1-Dichloroethylene	ND	0.03
1,1-Dichloroethane	0.04	0.02
trans-1,2-Dichloroethylene	ND	0.02
Trichlorofluoromethane	ND	0.02
Chloroform	ND	0.02
1,2-Dichloroethane	ND	0.02
1,1,1-Trichloroethane	0.44	0.02
Carbon Tetrachloride	ND	0.02
Bromodichloromethane	ND	0.02
1,1,2,2-Tetrachloroethane	ND	0.02
1,2-Dichloropropane	ND	0.02
trans-1,3-Dichloropropylene	ND	0.02
Trichloroethylene	ND	0.02
Dibromochloromethane	ND	0.02
1,1,2-Trichloroethane	ND	0.02
Benzene	ND	0.01
cis-1,3-Dichloropropylene	ND	0.02
2-Chloroethyl Vinyl Ether	ND	0.04
Bromoform	ND	0.03
Tetrachloroethylene	ND	0.02
Toluene	1.0	0.01
Chlorobenzene	ND	0.07
Ethylbenzene	ND	0.01
Total Xylenes	ND	0.01
1,3-Dichlorobenzene	ND	0.01
1,4-Dichlorobenzene	ND	0.01
1,2-Dichlorobenzene	ND	0.01

Client: WOODWARD CLYDE CONSULTANTS Sample: B-8-14-3

Job No: 12962

Date Matrix: Soil

Analyzed: 28-JUNE-89 Samp Amt: 0.1 gm Analysis: EPA 601/602 (8010/8020) Dil Fact: 1

Compound	Concentration mg/Kg	Detection Limits
Chloromethane	ND	0.05
Bromomethane	ND	0.05
Vinyl Chloride	ND	0.03
Chloroethane	ND	0.05
Methylene Chloride	ND	0.25
1,1-Dichloroethylene	ND	0.03
1,1-Dichloroethane	ND	0.02
trans-1,2-Dichloroethylene	ND	0.02
Trichlorofluoromethane	ND	0.02
Chloroform	ND	0.02
1,2-Dichloroethane	ND	0.02
1,1,1-Trichloroethane	0.05	0.02
Carbon Tetrachloride	ND	0.02
Bromodichloromethane	ND	0.02
1,1,2,2-Tetrachloroethane	ND	0.02
1,2-Dichloropropane	ND	0.02
trans-1,3-Dichloropropylene	ND	0.02
Trichloroethylene	ND	0.02
Dibromochloromethane	ND	0.02
1,1,2-Trichloroethane	ND	0.02
Benzene	ND	0.01
cis-1,3-Dichloropropylene	ND	0.02
2-Chloroethyl Vinyl Ether	ND	0.04
Bromoform	ND	0.03
Tetrachloroethylene	ND	0.02
Toluene	25	0.01
Chlorobenzene	ND	0.01
Ethylbenzene	ND	0.01
Total Xylenes	ND	0.01
1,3-Dichlorobenzene	ND	0.01
1,4-Dichlorobenzene	ND	0.01
1,2-Dichlorobenzene	ND	0.01



Client: WOODWARD-CLYDE CONSULTANTS Sample: B-9-9-3

Job No: 12962

Date Matrix: Soil

Analyzed: 28-Jun-89 Samp Amt: 0.1 gm Analysis: EPA 601/602 (8010/8020) Dil Fact: 1

Compound	Concentration mg/Kg	Detection Limits
Chloromethane	ND	0.05
Bromomethane	ND	0.05
Vinyl Chloride	ND	0.03
Chloroethane	ND	0.05
Methylene Chloride	ND	0.25
1,1-Dichloroethylene	ND	0.03
1,1-Dichloroethane	0.03	0.02
trans-1,2-Dichloroethylene	ND	0.02
Trichlorofluoromethane	ND	0.02
Chloroform	ND	0.02
1,2-Dichloroethane	ND	0.02
1,1,1-Trichloroethane	0.02	0.02
Carbon Tetrachloride	ND	0.02
Bromodichloromethane	ND	0.02
1,1,2,2-Tetrachloroethane	ND	0.02
1,2-Dichloropropane	ND	0.02
trans-1,3-Dichloropropylene	ND	0.02
Trichloroethylene	0.08	0.02
Dibromochloromethane	ND	0.02
1,1,2-Trichloroethane	ND	0.02
Benzene	ND	0.01
cis-1,3-Dichloropropylene	ND	0.02
2-Chloroethyl Vinyl Ether	ND	0.04
Bromoform	ND	0.03
Tetrachloroethylene	ND	0.02
Toluene	0.1	0.01
Chlorobenzene	ND	0.07
Ethylbenzene	ND	0.01
Total Xylenes	ND	0.01
1,3-Dichlorobenzene	ND	0.01
1,4-Dichlorobenzene	ND	0.01
1,2-Dichlorobenzene	ND	0.01

Client: WOODWARD CLYDE CONSULTANTS

Job No: 12962

Date Matrix: Soil

Analyzed: 28-JUNE-89 Samp Amt: 0.1 gm Analysis: EPA 601/602 (8010/8020) Dil Fact: 1

Sample: B-9-11-3

Compound	Concentration mg/Kg	Detection Limits
Chloromethane	ND	0.05
Bromomethane	ND	0.05
Vinyl Chloride	ND	0.03
Chloroethane	ND	0.05
Methylene Chloride	ND	0.25
1,1-Dichloroethylene	ND	0.03
1,1-Dichloroethane	ND	0.02
trans-1,2-Dichloroethylene	ND	0.02
Trichlorofluoromethane	ND	0.02
Chloroform	ND	0.02
1,2-Dichloroethane	ND	0.02
1,1,1-Trichloroethane	ND	0.02
Carbon Tetrachloride	ND	0.02
Bromodichloromethane	ND	0.02
1,1,2,2-Tetrachloroethane	ND	0.02
1,2-Dichloropropane	ND	0.02
trans-1,3-Dichloropropylene	ND	0.02
Trichloroethylene	0.02	0.02
Dibromochloromethane	ND	0.02
1,1,2-Trichloroethane	ND	0.02
Benzene	ND	0.01
cis-1,3-Dichloropropylene	ND	0.02
2-Chloroethyl Vinyl Ether	ND	0.04
Bromoform	ND	0.03
Tetrachloroethylene	ND	0.02
Toluene	0.11	0.01
Chlorobenzene	ND	0.01
Ethylbenzene	ND	0.01
Total Xylenes	ND	0.01
1,3-Dichlorobenzene	ND	0.01
1,4-Dichlorobenzene	ND	0.01
1,2-Dichlorobenzene	ND	0.01

Client: WOODWARD-CLYDE CONSULTANTS

Job No: 12962

Date Matrix: Soil

Analyzed: 28-Jun-89 Samp Amt: 0.1 gm Analysis: EPA 601/602 (8010/8020) Dil Fact: 1

Sample: B-9-12-3

Compound	Concentration mg/Kg	Detection Limits
Chloromethane	ND	0.05
Bromomethane	ND	0.05
Vinyl Chloride	ND	0.03
Chloroethane	ND	0.05
Methylene Chloride	ND	0.25
1,1-Dichloroethylene	ND	0.03
1,1-Dichloroethane	ND	0.02
trans-1,2-Dichloroethylene	ND	0.02
Trichlorofluoromethane	ND	0.02
Chloroform	ND	0.02
1,2-Dichloroethane	ND	0.02
1,1,1-Trichloroethane	0.03	0.02
Carbon Tetrachloride	ND	0.02
Bromodichloromethane	ND	0.02
1,1,2,2-Tetrachloroethane	ND	0.02
1,2-Dichloropropane	ND	0.02
trans-1,3-Dichloropropylene	ND	0.02
Trichloroethylene	ND	0.02
Dibromochloromethane	ND	0.02
1,1,2-Trichloroethane	ND	0.02
Benzene	ND	0.01
cis-1,3-Dichloropropylene	ND	0.02
2-Chloroethyl Vinyl Ether	ND	0.04
Bromoform	ND	0.03
Tetrachloroethylene	ND	0.02
Toluene	0.06	0.01
Chlorobenzene	ND	0.07
Ethylbenzene	ND	0.01
Total Xylenes	ND	0.01
1,3-Dichlorobenzene	ND	0.01
1,4-Dichlorobenzene	ND	0.01
1,2-Dichlorobenzene	ND	0.01

PROJECT NAME: DOUGLAS ALRORAFT CO.



CHAIN OF CUSTODY RECORD

SHIPMENT NO.: 5

PAGE 1 OF 3 DATE 6 1141 89

PROJECT NO .: 2941863 J - TOSK								
Sample Number	Location	Type of		Type of Container		of Preservation Chemical	Analysis F	Required *
Sample Hemoer		Material	Method		Temp	Nove	COMP	
B-8-1-3	3-8	Soil	YOD.	BRASS TUBE	ICE	, vave	COMPACT	ire Calbulo
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B-8-3-3					 			
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B-8-4-3							 	
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B-8-6-3		+ + -	 					
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B-2-6-4	+		 					
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B-8-9-3		1			++-			
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3-8-10-6	71 V	V		<u> </u>	51	7//		
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Special Shipmer	nt / Handlir	ng / Storage	Requireme	ents:				
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* Note - This does not constitute authorization to proceed with analysis

LA/OR-0183-421



CHAIN OF CUSTODY RECORD

SHIPMENT NO.: 5

PAGE 2 OF 3

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		JECT N		89 4	1865	J- TOS	<u> </u>				
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LA/OR-0183-421



CHAIN OF CUSTODY RECORD

SHIPMENT NO .:_ PAGE 3 OF _

DATE 6 1141 PROJECT NAME: DOUGUAS AIRCLAFT CO. 8941863 J-TASK 1 PROJECT NO.:____ Type of Preservation Analysis Required* Type of Sample Type of Container Location Sample Number Chemical Temp Method Material NOME KE RRASS TURE CONTACT: MOD B-9 SOIL Alistaire CALIF. Callendor 714) 835-6886 Total Number of Samples Shipped: 56 Sampler's Signature: Date Received By: Relinquished By: 6/15/89 Signature, Signature_ Printed Name Classus Time Printed Name Company_ Company_ 9:50 Reason ____ Date Received By: Relinquished By 11518 Signature 4 Signature Printed Name_ Printed Name 1012962 Time 2.30an Company_ Company___ Reason_ Date Received By: Relinquished By: Signature_ Signature_ Printed Name_ Time Printed Name_ Company_ Company_ Reason __ Date Received By: Relinquished By: Signature_ Signature, Printed Name_ Time Printed Name_ Company_ Company_ Reason _ Special Shipment / Handling / Storage Requirements:

Note — This does not constitute authorization to proceed with analysis

LA/OR-0183-421

July 27, 1989

WEST COAST ANALYTICAL SERVICE, INC.

Α

WOODWARD-CLYDE CONSULTANTS 203 N. Golden Circle Drive Santa Ana, CA 92705

Attn:

Dr. Alistaire Callender

JOB NO.

13191

LABORATORY REPORT

Samples Received: Nine (9) liquids in quadruplicate and one (1)

liquid in duplicate

Date Received: 7-13-89

Date Released for Analysis: 7-17-89

Purchase Order No: Proj#: 8941863J-Task 1/Douglas Aircraft

The samples were analyzed as follows:

Samples Analyzed Analysis

<u>Results</u>

Fifteen (15)

Volatile Organics

liquids by EPA 624

Data Sheets

Page 1 of 1

Michael Shelton Senior Chemist B. Michael Hovanec Senior Staff Chemist

WCAS JOB #: 13191

SAMPLE: D.I.-A

DATE RECEIVED: 07/13/89 RUN NUMBER: 13191V1
DATE EXTRACTED: 07/24/89 SAMPLE AMOUNT: 5ML
DATE ANALYZED: 07/24/89 MATRIX: WATER

VOLATILE ORGANICS (EPA 624/8240) UNITS: UG/L (PPB)

	•		
CAS #	COMPOUND	CONCENTRATION	
*****			========
67-64-1	ACETONE	ND	5.
71-43-2	BENZENE	ND	1.
75-27-4	BROMODICHLOROMETHANE	ND	1.
75-25-2	BROMOFORM	ND	1.
74-83-9	BROMOMETHANE	ND	5.
78-93-3	2-BUTANONE (MEK)	ND	5.
75-15-0	CARBON DISULFIDE	ND	1.
56-23-5	CARBON TETRACHLORIDE	ND	1.
108-90-7	CHLOROBENZENE	ИD	1.
75-00-3	CHLOROETHANE	ND	5.
110-75-8	2-CHLOROETHYLVINYLETHER	ND	10.
67-66-3	CHLOROFORM	ND	1.
74-87-3	CHLOROMETHANE	ND	5.
108-41-8	CHLOROTOLUENE	ND	1.
124-48-1	DIBROMOCHLOROMETHANE	ND	1.
95-50-1	1,2-DICHLOROBENZENE	ND	1.
541-73-1	1,3-DICHLOROBENZENE	ND	1.
106-46-7	1,4-DICHLOROBENZENE	ND	1.
75-34-3	1,1-DICHLOROETHANE	ND	1.
107-06-2	1,2-DICHLOROETHANE	ND	1.
75-35-4	1,1-DICHLOROETHYLENE	ND	1.
156-59-4	CIS-1,2-DICHLOROETHYLENE	ND	1.
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	1.
78-87-5	1,2-DICHLOROPROPANE	ND	1.
10061-01-5		ND	1.
10061-02-6		ND	1.
100-41-4	ETHYLBENZENE	ND	1.
106-93-4	ETHYLENE DIBROMIDE	ND	1.
76-13-1	FREON-TF	ND	1.
119-78-6	2-HEXANONE	ND	5.
75-09-2	METHYLENE CHLORIDE	ND	5.
	4-METHYL-2-PENTANONE (MIBK)	ND	5.
100-42-5	STYRENE	ND	1.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	1.
127-18-4	TETRACHLOROETHYLENE	ND	1.
109-99-9	TETRAHYDROFURAN	ND	5.
108-88-3	TOLUENE	ND	1.
71-55-6	1,1,1-TRICHLOROETHANE	ND	1.
79-00-5	1,1,2-TRICHLOROETHANE	ND	1.
79-01-6	TRICHLOROETHYLENE	ND	1.
75-69-4	TRICHLOROFLUOROMETHANE	ND	1.
108-05-4	VINYL ACETATE	ND	5.
75-01-4	VINYL CHLORIDE	ND	5.
95-47-6	TOTAL XYLENES	ND	1.

TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT:

WOODWARD-CLYDE

WCAS JOB #: 13191

SAMPLE: D.I.-A

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

VOA

WCAS JOB #: 13191

SAMPLE: WCC-1S-1A

DATE RECEIVED: 07/13/89 RUN NUMBER: 13191V10
DATE EXTRACTED: 07/21/89 SAMPLE AMOUNT: 250UL
DATE ANALYZED: 07/21/89 MATRIX: WATER

VOLATILE ORGANICS (EPA 624/8240) UNITS: UG/L (PPB)

	·				
CAS #	COMPOUND	CONCENTRATION			
67-64-1	ACETONE	ND	100.		
71-43-2	BENZENE	ND	20.		
75-27-4	BROMODICHLOROMETHANE	ND			
75-25-2	BROMOFORM	ND			
74-83-9	BROMOMETHANE	ND			
78-93-3	2-BUTANONE (MEK)	ND	100.		
	CARBON DISULFIDE	ND	20.		
56-23-5	CARBON TETRACHLORIDE	ND	20.		
108-90-7	CHLOROBENZENE	ND	20.		
75-00-3		ND	100.		
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	200.		
67-66-3	CHLOROFORM	ND	20.		
74-87-3	CHLOROMETHANE	ND			
108-41-8		ND	20.		
124-48-1	DIBROMOCHLOROMETHANE	ND	20.		
05-50-1	1 2-DICULODORENZENE	ND	20.		
541-73-1	1,3-DICHLOROBENZENE	ND	20.		
106-46-7	1,4-DICHLOROBENZENE	ND	20.		
75-34-3	1,1-DICHLOROETHANE	ND	20.		
107-06-2	1,2-DICHLOROETHANE	ND	20.		
75-35-4	1,1-DICHLOROETHYLENE	900.	20.		
156-59-4	1,2-DICHLOROBENZENE 1,3-DICHLOROBENZENE 1,4-DICHLOROBENZENE 1,1-DICHLOROETHANE 1,2-DICHLOROETHANE 1,1-DICHLOROETHYLENE CIS-1,2-DICHLOROETHYLENE	ND	20.		
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	20.		
78-87-5	1,2-DICHLOROPROPANE	ND	20.		
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	20.		
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	20.		
100-41-4	ETHYLBENZENE	ND	20.		
106-93-4	ETHYLENE DIBROMIDE	ND	20.		
76-13-1	FREON-TF	ND	20.		
119-78-6	2-HEXANONE	ND	100.		
75-09-2	METHYLENE CHLORIDE	ND	100.		
	4-METHYL-2-PENTANONE (MIBK)	ND	100.		
100-42-5	STYRENE	ND	20.		
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	20.		
127-18-4	TETRACHLOROETHYLENE	ND	20.		
109-99-9	TETRAHYDROFURAN	ND	100.		
108-88-3	TOLUENE	ND	20.		
71-55-6	1,1,1-TRICHLOROETHANE	67.	20.		
79-00-5	1,1,2-TRICHLOROETHANE	ND	20.		
79-01-6	TRICHLOROETHYLENE	2400.	20.		
75-69-4	TRICHLOROFLUOROMETHANE	ND	20.		
108-05-4	VINYL ACETATE	ND	100.		
75-01-4	VINYL CHLORIDE	ND	100.		
95-47-6	TOTAL XYLENES	ND	20.		
· -					

TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT:

WOODWARD-CLYDE

SAMPLE: WCC-1S-1A

WCAS JOB #: 13191

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

VOA

WCAS JOB #: 13191

SAMPLE: WCC-1S-1R

DATE RECEIVED: 07/13/89 DATE EXTRACTED: 07/21/89 DATE ANALYZED: 07/21/89 RUN NUMBER: 13191V13

SAMPLE AMOUNT: 5ML WATER MATRIX:

VOLATILE ORGANICS (EPA 624/8240)

UNITS: UG/L (PPB)

CAS #	COMPOUND	CONCENTRATION	DET LIMIT
67-64-1	ACETONE	ND	5.
71-43-2	BENZENE	ND	1.
75-27-4	BROMODICHLOROMETHANE	ND	1.
75-25-2	BROMOFORM	ND	1.
74-83-9	BROMOMETHANE	ND	5.
78-93-3	2-BUTANONE (MEK)	ND	5.
75-15-0	CARBON DISULFIDE	ND	1.
56-23-5	CARBON TETRACHLORIDE	ND	1.
108-90-7	CHLOROBENZENE	ND	<u>1</u> .
75-00-3	CHLOROETHANE	ND	5.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	10.
67-66-3	CHLOROFORM	ND	1.
74-87-3	CHLOROMETHANE	ND	5.
108-41-8	CHLOROTOLUENE	ND	1.
124-48-1	DIBROMOCHLOROMETHANE	ND	1.
95-50-1	1,2-DICHLOROBENZENE	ND	1.
541-73-1	1,3-DICHLOROBENZENE	ND	1.
106-46-7	1,4-DICHLOROBENZENE	ND	1.
75-34-3	1,1-DICHLOROETHANE	ND	1.
107-06-2	1,2-DICHLOROETHANE	ND	1.
75-35-4	1,1-DICHLOROETHYLENE	ND	1.
156-59-4	CIS-1,2-DICHLOROETHYLENE	ND	1.
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	1.
78-87-5	1,2-DICHLOROPROPANE	ND	1. 1.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	1.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND ND	1.
100-41-4	ETHYLBENZENE	ND	1.
106-93-4	ETHYLENE DIBROMIDE	ND	1.
76-13-1	FREON-TF	ND	5.
119-78-6	2-HEXANONE	ND	5.
75-09-2	METHYLENE CHLORIDE	ND	5.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	1.
100-42-5	STYRENE	ND	1.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	1.
127-18-4	TETRACHLOROETHYLENE	ND	5.
109-99-9	TETRAHYDROFURAN	ND	
108-88-3	TOLUENE	ND	
71-55-6	1,1,1-TRICHLOROETHANE	ND	
79-00-5	1,1,2-TRICHLOROETHANE	ND	
79-01-6	TRICHLOROETHYLENE TRICHLOROFLUOROMETHANE	ND	
75-69-4		ND	
108-05-4	VINYL ACETATE	ND	
75-01-4	VINYL CHLORIDE TOTAL XYLENES	ND	
95-47-6	TOTAL VITENES	2	

TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT:

WOODWARD-CLYDE

SAMPLE: WCC-1S-1R

WCAS JOB #: 13191

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

VOA

WCAS JOB #: 13191

SAMPLE: WCC-2S-1A

DATE RECEIVED: 07/13/89 DATE EXTRACTED: 07/20/89

DATE ANALYZED: 07/20/89

RUN NUMBER: 13191V1 SAMPLE AMOUNT: 5ML MATRIX: WATER

VOLATILE ORGANICS (EPA 624/8240)

UNITS: UG/L (PPB)

CAS #	C #		
	COMPOUND	CONCENTRATION	DET LIMIT
67-64-1	ACETONE		========
71-43-2	BENZENE	ND	5.
75-27-4		ND	1.
75-25-2	BROMODICHLOROMETHANE	ND	1.
74-83-9	BROMOFORM	ND	1.
78-93-3	BROMOMETHANE	ND	5.
75-15-0	2-BUTANONE (MEK)	ND	5.
56-23-5	CARBON DISULFIDE	ND	1.
108-90-7	CARBON TETRACHLORIDE	ND	1.
75-00-3	CHLOROBENZENE	ND	1.
110-75-8	CHLOROETHANE	ND	5.
67-66-3	2-CHLOROETHYLVINYL ETHER	ND	10.
74-87-3	CHLOROFORM	ND	1.
108-41-8	CHLOROMETHANE	ND	5.
124-48-1	CHLOROTOLUENE	ND	1.
95-50-1	DIBROMOCHLOROMETHANE	ND	1.
541-73-1	1,2-DICHLOROBENZENE	ND	1.
106-46-7	1,3-DICHLOROBENZENE	ND	1.
75-34-3	1,4-DICHLOROBENZENE	ND	1.
107-06-2	1,1-DICHLOROETHANE	ND	1.
75-35-4	1,2-DICHLOROETHANE	ND	1.
156-59-4	1,1-DICHLOROETHYLENE	ND	1.
156-60-5	CIS-1,2-DICHLOROETHYLENE	ND	1.
	TRANS-1,2-DICHLOROETHYLENE	ND	1.
78-87-5	1,2-DICHLOROPROPANE	ND	1.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	1.
10061-02-6 100-41-4	TRANS-1,3-DICHLOROPROPENE	ND	1.
	ETHYLBENZENE	ND	1.
106-93-4 76-13-1	ETHYLENE DIBROMIDE	ND	1.
	FREON-TF	ND	1.
119-78-6	2-HEXANONE	ND	5.
75-09-2	METHYLENE CHLORIDE	ND	5.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	5.
100-42-5	STYRENE	ND	1.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	1.
127-18-4	TETRACHLOROETHYLENE	ND	1.
109-99-9	TETRAHYDROFURAN	ND	5.
108-88-3	TOLUENE	ND	1.
71-55-6	1,1,1-TRICHLOROETHANE	ND	1.
79-00-5	1,1,2-TRICHLOROETHANE	ND	1.
79-01-6	TRICHLOROETHYLENE	5.	i.
75-69-4	TRICHLOROFLUOROMETHANE	ND	î.
108-05-4	VINYL ACETATE	ND	5.
75-01-4	VINYL CHLORIDE	ND	5.
95-47-6	TOTAL XYLENES	ND	1.
		110	

TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT:

WOODWARD-CLYDE

WCAS JOB #: 13191

SAMPLE: WCC-2S-1A

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

VOA

WCAS JOB #: 13191

SAMPLE: WCC-3S-1A

DATE RECEIVED: 07/13/89
DATE EXTRACTED: 07/25/89
DATE ANALYZED: 07/25/89

RUN NUMBER: 13191V50 SAMPLE AMOUNT: 10UL MATRIX: WATER

VOLATILE ORGANICS (EPA 624/8240)

UNITS: UG/L (PPB)

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CAS #	COMPOUND	CONCENTRATION	DET LIMIT
		=======================================	
67-64-1	ACETONE		
71-43-2	BENZENE	ND	3000.
75-27-4	BROMODICHLOROMETHANE	ND	500.
75-25-2	BROMOFORM	ND	500.
74-83-9	BROMOMETHANE	ND	500.
78-93-3	2-BUTANONE (MEK)	ND	3000.
75-15-0	CARBON DISULFIDE	ND	3000.
56-23-5	CARBON TETRACHLORIDE	ND	500.
108-90-7	CHLOROBENZENE	ND	500.
75-00-3	CHLOROETHANE	. ND	500.
110-75-8		ND	3000.
67-66-3	2-CHLOROETHYLVINYLETHER CHLOROFORM	ND	5000.
74-87-3		ND	500.
108-41-8	CHLOROMETHANE	ND	3000.
124-48-1	CHLOROTOLUENE	ND	500.
95-50-1	DIBROMOCHLOROMETHANE	ND	500.
541-73-1	1,2-DICHLOROBENZENE	ND	500.
106-46-7	1,3-DICHLOROBENZENE	ND	500.
75-34-3	1,4-DICHLOROBENZENE	ND	500.
107-06-2	1,1-DICHLOROETHANE	ND	500.
75-35-4	1,2-DICHLOROETHANE	ND	500.
156-59-4	1,1-DICHLOROETHYLENE	18000.	500.
156-69-4	CIS-1,2-DICHLOROETHYLENE	ND	500.
	TRANS-1,2-DICHLOROETHYLENE	660.	500.
78-87-5	1,2-DICHLOROPROPANE	ND	500.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	500.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	500.
100-41-4	ETHYLBENZENE	ND	500.
106-93-4	ETHYLENE DIBROMIDE	ND	500.
76-13-1	FREON-TF	ND	500.
119-78-6	2-HEXANONE	ND	3000.
75-09-2	METHYLENE CHLORIDE	ND	3000.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	3000.
100-42-5	STYRENE	ND	500.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	500.
127-18-4	TETRACHLOROETHYLENE	ND	500.
109-99-9	TETRAHYDROFURAN	ND	3000.
108-88-3	TOLUENE	32000.	500.
71-55-6	1,1,1-TRICHLOROETHANE	56000.	500.
79-00-5	1,1,2-TRICHLOROETHANE	550.	500.
79-01-6	TRICHLOROETHYLENE	7700.	500.
75-69-4	TRICHLOROFLUOROMETHANE	ND	500.
108-05-4	VINYL ACETATE	ND	3000.
75-01-4	VINYL CHLORIDE	ND	3000.
95-47-6	TOTAL XYLENES		
		ND	500.

TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT:

WOODWARD-CLYDE

SAMPLE: WCC-3S-1A

WCAS JOB #: 13191

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

CONCENTRATION

1 NONE FOUND

VOA

WCAS JOB #: 13191

SAMPLE: WCC-4S-1A

DATE RECEIVED: 07/13/89

DATE EXTRACTED: 07/25/89 DATE ANALYZED: 07/25/89 RUN NUMBER:

13191V60

SAMPLE AMOUNT: 2ML MATRIX: WATER

VOLATILE ORGANICS (EPA 624/8240)

UNITS: UG/L (PPB)

CONCENTRATION DET LIMIT	(DIA 024/0240)		UNITS: UG/L (P	PDI
ACTIONE	*			
71-43-2 BENZENE ND 3. 75-27-4 BROMODICHLOROMETHANE ND 3. 75-27-2 BROMOFORM ND 3. 74-83-9 BROMOFORM ND 20. 78-93-3 2-BUTANONE (MEK) ND 20. 75-15-0 CARBON DISULFIDE ND 3. 75-00-3 CHLOROENTHANE ND 3. 75-00-3 CHLOROENTHANE ND 30. 100-75-8 2-CHLOROENTHANE ND 30. 108-90-7 CHLOROFORM ND 30. 108-41-8 CHLOROFORM ND 30. 124-48-1 DIBROMOCHLOROMETHANE ND 30. 124-48-1 DIBROMOCHLOROMETHANE ND 3. 124-48-1 DIBROMOCHLOROMETHANE ND 3. 155-00-1 1,2-DICHLOROBENZENE ND 3. 106-46-7 1,4-DICHLOROBENZENE ND 3. 106-46-7 1,4-DICHLOROBENZENE ND 3. 107-06-2 1,2-DICHLOROETHANE ND 3. 107-06-2 1,2-DICHLOROETHANE ND 3. 107-06-2 1,2-DICHLOROETHANE ND 3. 156-60-5 TRANS-1,2-DICHLOROETHYLENE ND 3. 156-60-5 TRANS-1,2-DICHLOROETHYLENE ND 3. 10061-01-5 CIS-1,3-DICHLOROFOPENE ND 3. 10061-02-6 TRANS-1,3-DICHLOROFOPENE ND 3. 100-41-4 ETHYLBENZENE ND 3. 100-41-4 ETHYLBENZENE ND 3. 100-42-5 STYRENE ND 3. 119-78-6 2-HEXANONE ND 3. 119-78-6 2-HEXANONE ND 3. 119-78-6 2-HEXANONE ND 3. 119-78-6 1,1,2-TETRACHLOROETHANE ND 3. 119-78-6 1,1,2-TETRACHLOROETHANE ND 3. 119-78-6 1,1,2-TETRACHLOROETHANE ND 3. 119-78-6 1,1,1-TRICHLOROETHANE ND 3. 119-79-01-6 TRICHLOROETHANE ND 3. 119-79-01-6 TRICHLOROETHANE ND 3. 119-79-01-6 TRICHLOROETHANE ND 3. 119-79-01-6 TRICHLOROETHANE ND 3. 1198-00-5-4 VINYL CHLOROETHANE ND 20.				
75-27-4 BROMOTOCHLOROMETHANE ND 3. 75-25-2 BROMOFORM ND 3. 74-83-9 BROMOMETHANE ND 20. 78-93-3 2-BUTANONE (MEK) ND 20. 75-15-0 CARBON DISULFIDE ND 3. 108-90-7 CHLOROBENZENE ND 3. 75-00-3 CHLOROETHANE ND 20. 110-75-8 2-CHLOROETHYLVINYLETHER ND 30. 67-66-3 CHLOROFTHANE ND 30. 108-41-8 CHLOROTOLUENE ND 3. 108-41-8 CHLOROTOLUENE ND 3. 108-41-8 CHLOROTOLUENE ND 3. 108-41-8 CHLOROTOLUENE ND 3. 108-41-3 CHLOROTOLUENE ND 3. 108-41-3 CHLOROTOLUENE ND 3. 108-41-3 DIBROMCHLOROMETHANE ND 3. 108-41-3 DIBROMCHLOROMETHANE ND 3. 106-45-7 <td< td=""><td>67-64-1</td><td>ACETONE</td><td>ND</td><td>20.</td></td<>	67-64-1	ACETONE	ND	20.
75-25-2 BROMOFORM	71-43-2	BENZENE	ND	
74-83-9 BROMMETHANE ND 20. 78-93-3 2-BUTANONE (MEK) ND 20. 75-15-0 CARBON DISULFIDE ND 3. 56-23-5 CARBON TETRACHLORIDE ND 3. 108-90-7 CHLOROBENZENE ND 3. 75-00-3 CHLOROFTHYLVINYLETHER ND 30. 67-66-3 CHLOROFTHYLVINYLETHER ND 30. 67-66-3 CHLOROFTHYLVINYLETHER ND 3. 108-41-8 CHLOROTOLUENE ND 3. 124-48-1 DIBROMOCHLOROETHANE ND 3. 124-48-1 DIBROMOCHLOROETHANE ND 3. 55-50-1 1,2-DICHLOROBENZENE ND 3. 106-46-7 1,4-DICHLOROBENZENE ND 3. 107-06-2 1,2-DICHLOROETHANE ND 3. 107-06-2 1,2-DICHLOROETHYLENE ND 3. 156-60-5 TRANS-1,2-DICHLOROETHYLENE ND 3. 156-60-5 TRANS-1,2-DICHLOROETHYLENE ND <	75-27-4	BROMODICHLOROMETHANE	ND	3.
78-93-3 2-BUTANONE (MEK) ND 20. 75-15-0 CARBON DISULFIDE ND 3. 56-23-5 CARBON TETRACHLORIDE ND 3. 108-90-7 CHLOROBENZENE ND 20. 110-75-8 2-CHLOROETHYLVINYLETHER ND 30. 67-66-3 CHLOROFORM ND 3. 74-87-3 CHLOROTOLUENE ND 3. 108-41-8 CHLOROTOLUENE ND 3. 124-48-1 DIBROMOCHLOROBENZENE ND 3. 95-50-1 1,2-DICHLOROBENZENE ND 3. 106-46-7 1,4-DICHLOROBENZENE ND 3. 107-66-2 1,2-DICHLOROETHANE ND 3. 107-66-2 1,2-DICHLOROETHYLENE ND 3. 156-69-4 CIS-1,2-DICHLOROETHYLENE ND 3. 156-69-5 TRANS-1,2-DICHLOROETHYLENE ND 3. 10061-01-5 CIS-1,3-DICHLOROETHYLENE ND 3. 10061-02-6 TRANS-1,3-DICHLOROETHYLENE ND	75-25-2	BROMOFORM	ND	3.
75-15-0 CARBON DISULFIDE	74-83-9	BROMOMETHANE	ND	20.
56-23-5 CARBON TETRACHLORIDE	78-93-3	2-BUTANONE (MEK)	ND	20.
108-90-7		CARBON DISULFIDE	ND	3.
T5-00-3		CARBON TETRACHLORIDE	ND	3.
110-75-8 2-CHLOROETHYLVINYLETHER		CHLOROBENZENE	ND	3.
67-66-3 CHLOROFORM ND 3. 74-87-3 CHLOROMETHANE ND 20. 108-41-8 CHLOROTOLUENE ND 3. 124-48-1 DIBROMOCHLOROMETHANE ND 3. 95-50-1 1,2-DICHLOROBENZENE ND 3. 541-73-1 1,3-DICHLOROBENZENE ND 3. 106-46-7 1,4-DICHLOROETHANE ND 3. 75-34-3 1,1-DICHLOROETHANE ND 3. 107-06-2 1,2-DICHLOROETHYLENE ND 3. 156-59-4 CIS-1,2-DICHLOROETHYLENE 170. 3. 156-59-4 CIS-1,2-DICHLOROETHYLENE ND 3. 156-60-5 TRANS-1,2-DICHLOROETHYLENE ND 3. 106-10-5 CIS-1,3-DICHLOROPROPENE ND 3. 10061-02-6 TRANS-1,3-DICHLOROFROPENE ND 3. 106-93-4 ETHYLENE DIBROMIDE ND 3. 76-13-1 FREON-TF ND 3. 108-09-2 METHYLENE DIBROMIDE ND		CHLOROETHANE	ND	20.
74-87-3 CHLOROMETHANE ND 20. 108-41-8 CHLOROTOLUENE ND 3. 124-48-1 DIBROMOCHLOROMETHANE ND 3. 95-50-1 1,2-DICHLOROBENZENE ND 3. 541-73-1 1,3-DICHLOROBENZENE ND 3. 106-46-7 1,4-DICHLOROBENZENE ND 3. 107-06-2 1,2-DICHLOROETHANE ND 3. 107-06-2 1,2-DICHLOROETHYLENE 170. 3. 156-59-4 CIS-1,2-DICHLOROETHYLENE 10. 3. 156-60-5 TRANS-1,2-DICHLOROETHYLENE ND 3. 10061-01-5 CIS-1,3-DICHLOROFROPENE ND 3. 10061-02-6 TRANS-1,3-DICHLOROFROPENE ND 3. 100-41-4 ETHYLENE DIBROMIDE ND 3. 106-93-4 ETHYLENE DIBROMIDE ND 3. 119-78-6 2-HEXANONE ND 20. 108-10-1 4-METHYLENE CHLORIDE ND 3. 109-99-9 METHANCHANE ND			ND	30.
108-41-8			ND	3.
124-48-1			ND	20.
95-50-1 1,2-DICHLOROBENZENE ND 3. 541-73-1 1,3-DICHLOROBENZENE ND 3. 106-46-7 1,4-DICHLOROBENZENE ND 3. 75-34-3 1,1-DICHLOROETHANE ND 3. 107-06-2 1,2-DICHLOROETHYLENE ND 3. 156-59-4 CIS-1,2-DICHLOROETHYLENE 10. 3. 156-60-5 TRANS-1,2-DICHLOROETHYLENE ND 3. 1066-05 TRANS-1,2-DICHLOROFROPENE ND 3. 10061-01-5 CIS-1,3-DICHLOROPROPENE ND 3. 10061-02-6 TRANS-1,3-DICHLOROPROPENE ND 3. 100-41-4 ETHYLENE DIBROMIDE ND 3. 100-41-4 ETHYLENE DIBROMIDE ND 3. 76-13-1 FREON-TF ND 3. 119-78-6 2-HEXANONE ND 20. 75-09-2 METHYLENE CHLORIDE ND 20. 108-10-1 4-METHYL-2-PENTANONE (MIBK) ND 20. 109-34-5 1,1,2,2-TETRACHLOROETHANE ND 3. 109-99-9 TETRAHYDROFURAN			ND	3.
541-73-1 1,3-DICHLOROBENZENE ND 3. 106-46-7 1,4-DICHLOROBENZENE ND 3. 75-34-3 1,1-DICHLOROETHANE ND 3. 107-06-2 1,2-DICHLOROETHYLENE ND 3. 75-35-4 1,1-DICHLOROETHYLENE 170. 3. 156-59-4 CIS-1,2-DICHLOROETHYLENE ND 3. 156-60-5 TRANS-1,2-DICHLOROETHYLENE ND 3. 10061-01-5 CIS-1,3-DICHLOROPROPANE ND 3. 10061-02-6 TRANS-1,3-DICHLOROPROPENE ND 3. 100-41-4 ETHYLENE DIBROMIDE ND 3. 106-93-4 ETHYLENE DIBROMIDE ND 3. 76-13-1 FREON-TF ND 3. 119-78-6 2-HEXANONE ND 20. 75-09-2 METHYLENE CHLORIDE ND 20. 108-10-1 4-METHYL-2-PENTANONE (MIBK) ND 3. 79-34-5 1,1,2,2-TETRACHLOROETHANE ND 3. 127-18-4 TETRACHLOROETHYLENE ND 3. 71-55-6 1,1,1-TRICHLOROETHANE			ND	
106-46-7				
75-34-3 1,1-DICHLOROETHANE ND 3. 107-06-2 1,2-DICHLOROETHANE ND 3. 75-35-4 1,1-DICHLOROETHYLENE 170. 3. 156-59-4 CIS-1,2-DICHLOROETHYLENE 10. 3. 156-60-5 TRANS-1,2-DICHLOROETHYLENE ND 3. 78-87-5 1,2-DICHLOROPROPANE ND 3. 10061-01-5 CIS-1,3-DICHLOROPROPENE ND 3. 10061-02-6 TRANS-1,3-DICHLOROPROPENE ND 3. 100-41-4 ETHYLBENZENE ND 3. 106-93-4 ETHYLENE DIBROMIDE ND 3. 76-13-1 FREON-TF ND 3. 119-78-6 2-HEXANONE ND 20. 75-09-2 METHYLENE CHLORIDE ND 20. 108-10-1 4-METHYL-2-PENTANONE (MIBK) ND 20. 100-42-5 STYRENE ND 3. 79-34-5 1,1,2,2-TETRACHLOROETHANE ND 3. 109-99-9 TETRAHYDROFURAN ND 20. 108-88-3 TOLUENE ND 3.		· · · · · · · · · · · · · · · · · · ·		
107-06-2 1,2-DICHLOROETHANE ND 3. 75-35-4 1,1-DICHLOROETHYLENE 170. 3. 156-59-4 CIS-1,2-DICHLOROETHYLENE 10. 3. 156-60-5 TRANS-1,2-DICHLOROETHYLENE ND 3. 1066-05 TRANS-1,3-DICHLOROPROPENE ND 3. 10061-01-5 CIS-1,3-DICHLOROPROPENE ND 3. 10061-02-6 TRANS-1,3-DICHLOROPROPENE ND 3. 100-41-4 ETHYLENE DIBROMIDE ND 3. 106-93-4 ETHYLENE DIBROMIDE ND 3. 76-13-1 FREON-TF ND 3. 119-78-6 2-HEXANONE ND 20. 75-09-2 METHYLENE CHLORIDE ND 20. 108-10-1 4-METHYL-2-PENTANONE (MIBK) ND 20. 108-10-1 4-METHYL-2-PENTANONE (MIBK) ND 3. 127-18-4 TETRACHLOROETHYLENE ND 3. 127-18-4 TETRACHLOROETHYLENE ND 3. 108-88-3 TOLUENE ND 3. 79-00-5 1,1,2-TRICHLOROETHANE ND				
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108-05-4 VINYL ACETATE ND 20. 75-01-4 VINYL CHLORIDE ND 20.				
75-01-4 VINYL CHLORIDE ND 20.				
95-47-6 TOTAL XYLENES ND 3.		··· · · · · · · · · ·		
	95-47-6	TOTAL XYLENES	ND	3.

TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT:

WOODWARD-CLYDE

WCAS JOB #: 13191

SAMPLE: WCC-4S-1A

UNITS: UG/L (PPB)

COMPOUND NAME

APPROXIMATE FRACTION CONCENTRATION

1 NONE FOUND

VOA

WCAS JOB #: 13191

SAMPLE: WCC-5S-1A

DATE RECEIVED: 07/13/89 RUN NUMBER:

DATE EXTRACTED: 07/25/89 DATE ANALYZED: 07/25/89 13191V51

SAMPLE AMOUNT: 5ML MATRIX: WATER

VOLATILE ORGANICS (EPA 624/8240) UNITS: UG/L (PPB)

CAS #	COMPOUND	CONCENTRATION	DET LIMIT
			_
67-64-1	ACETONE	ND	5.
71-43-2	BENZENE	ND	1.
75-27-4	BROMODICHLOROMETHANE	ND	1.
75-25-2	BROMOFORM	ND	1.
74-83-9	BROMOMETHANE	ND	5.
78-93-3	2-BUTANONE (MEK)	ND	5.
75-15-0	CARBON DISULFIDE	ND	1.
56-23-5	CARBON TETRACHLORIDE	ND	1.
108-90-7	CHLOROBENZENE	ND	1.
75-00-3	CHLOROETHANE	ND	5.
110-75-8	2-CHLOROETHYLVINYLETHER	ND	10.
67-66-3	CHLOROFORM	ND	1. 5.
74-87-3	CHLOROMETHANE	ND	
108-41-8	CHLOROTOLUENE	ND	1. 1.
124-48-1	DIBROMOCHLOROMETHANE	ND	1.
95-50-1	1,2-DICHLOROBENZENE	ND	1.
541-73-1	1,3-DICHLOROBENZENE	ND	1.
106-46-7	1,4-DICHLOROBENZENE	ND ND	1.
75-34-3	1,1-DICHLOROETHANE	ND	1.
107-06-2	1,2-DICHLOROETHANE	3.	1.
75-35-4	1,1-DICHLOROETHYLENE	5. 6.	1.
156-59-4	CIS-1,2-DICHLOROETHYLENE	ND	1.
156-60-5	TRANS-1, 2-DICHLOROETHYLENE	ND	1.
78-87-5	1,2-DICHLOROPROPANE	ND	i.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	1.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	i.
100-41-4	ETHYLBENZENE	ND	i.
106-93-4	ETHYLENE DIBROMIDE	ND	1.
76-13-1	FREON-TF	ND	5.
119-78-6	2-HEXANONE	ND	5.
75-09-2	METHYLENE CHLORIDE 4-METHYL-2-PENTANONE (MIBK)	ND	5.
108-10-1	STYRENE (MIDK)	ND	1.
100-42-5	1,1,2,2-TETRACHLOROETHANE	ND	1.
79-34-5	TETRACHLOROETHYLENE	ND	1.
127-18-4 109-99-9	TETRAHYDROFURAN	ND	5.
109-99-9	TOLUENE	ND	1.
71-55-6	1,1,1-TRICHLOROETHANE	ND	1.
79-00-5	1,1,2-TRICHLOROETHANE	ND	1.
79-00-5 79-01-6	TRICHLOROETHYLENE	13.	1.
75-69-4	TRICHLOROFLUOROMETHANE	ND	1.
108-05-4	VINYL ACETATE	ND	5.
75-01-4	VINYL CHLORIDE	ND	
95-47-6	TOTAL XYLENES	ND	
33-47-0	TATUTE UTTOUTED		

TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT:

WOODWARD-CLYDE

SAMPLE: WCC-5S-1A

WCAS JOB #: 13191

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

VOA

WCAS JOB #: 13191

SAMPLE: WCC-5S-1B

DATE RECEIVED: 07/13/89 RUN NUMBER: 13191V52 DATE EXTRACTED: 07/25/89

DATE ANALYZED: 07/25/89

SAMPLE AMOUNT: 5ML MATRIX: WATER

VOLATILE ORGANICS (EPA 624/8240) UNITS: UG/L (PPB)

CAS #	COMPOUND	CONCENTRATION	DET LIMIT
		2=====================================	
67-64-1	ACETONE	ND	5.
71-43-2	BENZENE	ND	1.
75-27-4	BROMODICHLOROMETHANE	ND	1.
75-25-2	BROMOFORM	ND	1.
74-83-9	BROMOMETHANE	ND	5.
78-93-3	2-BUTANONE (MEK)	ND	5.
75-15-0	CARBON DISULFIDE	ND	1.
56-23-5	CARBON TETRACHLORIDE	ND	1.
108-90-7	CHLOROBENZENE	ND	1.
75-00-3	CHLOROETHANE	ND	5.
110-75-8	2-CHLOROETHYLVINYLETHER	ND	10.
67-66-3	CHLOROFORM	ND	1.
74-87-3	CHLOROMETHANE	ND	5.
108-41-8	CHLOROTOLUENE	ND	1.
124-48-1	DIBROMOCHLOROMETHANE	ND	1.
95-50-1	1,2-DICHLOROBENZENE	ND	1.
541-73-1	1,3-DICHLOROBENZENE	ND	1.
106-46-7	1,4-DICHLOROBENZENE	ND	1.
75-34-3	1,1-DICHLOROETHANE	ND	1.
107-06-2	1,2-DICHLOROETHANE	ND	1.
75-35-4	1,1-DICHLOROETHYLENE	3.	1.
156-59-4	CIS-1,2-DICHLOROETHYLENE	6.	1.
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	1.
78-87-5	1,2-DICHLOROPROPANE	ND	1.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	1.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	1.
100-41-4	ETHYLBENZENE	ND	1.
106-93-4	ETHYLENE DIBROMIDE	ND	1.
76-13-1	FREON-TF	ND	1.
119-78-6	2-HEXANONE	ND	5.
75-09-2	METHYLENE CHLORIDE	ND	5.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	5.
100-42-5	STYRENE	ND	1.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	1.
127-18-4	TETRACHLOROETHYLENE	ND	1.
109-99-9	TETRAHYDROFURAN	ND	5.
108-88-3	TOLUENE	ND	1.
71-55-6	1,1,1-TRICHLOROETHANE	ND	1.
79-00-5	1,1,2-TRICHLOROETHANE	ND	1.
79-01-6	TRICHLOROETHYLENE	12.	1.
75-69-4	TRICHLOROFLUOROMETHANE	ND	1.
108-05-4	VINYL ACETATE	ND	5.
75-01-4	VINYL CHLORIDE	ND	5.
95-47-6	TOTAL XYLENES	ND	1.

CLIENT:

WOODWARD-CLYDE

SAMPLE: WCC-5S-1B

WCAS JOB #: 13191

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

WCAS JOB #: 13191

SAMPLE: WCC-7S-1A

DATE RECEIVED: 07/13/89
DATE EXTRACTED: 07/25/89

DATE EXTRACTED: 07/25/89
DATE ANALYZED: 07/25/89

RUN NUMBER: 13191V61 SAMPLE AMOUNT: 500UL MATRIX: WATER

UNITS: UG/L (PPB)

VOLATILE ORGANICS (EPA 624/8240)

	0.1.1.00 (21.1. 0.1.7 0.1.07	ON115. 00/ E	
CAS #	COMPOUND	CONCENTRATION	
67-64-1	ACETONE	ND	50.
71-43-2	BENZENE	ND	10.
75-27-4	BROMODICHLOROMETHANE	ND	10.
75-25-2	BROMOFORM	ND	10.
74-83-9	BROMOMETHANE	ND	50.
78-93-3	2-BUTANONE (MEK)	ND	50.
75-15-0	CARBON DISULFIDE	ND	10.
56-23-5	CARBON TETRACHLORIDE	ND	10.
108-90-7	CHLOROBENZENE	ND	10.
75-00-3	CHLOROETHANE	ND	50.
110-75-8	2-CHLOROETHYLVINYLETHER	ND	100.
67-66-3	CHLOROFORM	ND	10.
74-87-3	CHLOROMETHANE	ND	50.
108-41-8	CHLOROTOLUENE	ND	10.
124-48-1	DIBROMOCHLOROMETHANE	ND	10.
95-50-1	1,2-DICHLOROBENZENE	ND	10.
541-73-1	1,3-DICHLOROBENZENE	ND	10.
106-46-7	1,4-DICHLOROBENZENE	ND	10.
75-34-3	1,1-DICHLOROETHANE	ND	10.
107-06-2	1,2-DICHLOROETHANE	ND	10.
75-35-4	1,1-DICHLOROETHYLENE	850.	10.
156-59-4	CIS-1,2-DICHLOROETHYLENE	26.	10.
156-60-5	TRANS-1,2-DICHLOROETHYLENE	11.	10.
78-87-5	1,2-DICHLOROPROPANE	ND	10.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	10.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	10.
100-41-4	ETHYLBENZENE	ND	10.
106-93-4	ETHYLENE DIBROMIDE	ND	10.
76-13-1	FREON-TF	ND	10.
119-78-6	2-HEXANONE	ND	50.
75-09-2	METHYLENE CHLORIDE	ND	50.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	50.
100-42-5	STYRENE	ND	10.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	10.
127-18-4	TETRACHLOROETHYLENE	ND	10.
109-99-9	TETRAHYDROFURAN	ND	50.
108-88-3	TOLUENE	ND	10.
71-55-6	1,1,1-TRICHLOROETHANE	110.	10.
79-00-5	1,1,2-TRICHLOROETHANE	ND	10.
79-01-6	TRICHLOROETHYLENE	1300.	10.
75-69-4	TRICHLOROFLUOROMETHANE	ND	10.
108-05-4	VINYL ACETATE	ND	50.
75-01-4	VINYL CHLORIDE	ND	50.
95-47-6	TOTAL XYLENES	ND	10.

CLIENT: WOODWARD-CLYDE

WCAS JOB #: 13191

SAMPLE: WCC-7S-1A

UNITS: UG/L (PPB)

COMPOUND NAME

APPROXIMATE FRACTION CONCENTRATION

1 NONE FOUND

WCAS JOB #: 13191

SAMPLE: WCC-8S-1A

DATE RECEIVED: 07/13/89

DATE EXTRACTED: 07/25/89 DATE ANALYZED: 07/25/89 RUN NUMBER: 13191V58
SAMPLE AMOUNT: 1ML
MATRIX: WATER

VOLATILE ORGANICS (EPA 624/8240) UNITS: UG/L (PPB)

CAS #	COMPOUND	CONCENTRATION	DET LIMIT
67-64-1	ACETONE	ND	30.
71-43-2	BENZENE	ND	5.
		ND	5.
75-27-4	BROMODICHLOROMETHANE		
75-25 - 2	BROMOFORM	ND	5.
74-83-9	BROMOMETHANE	ND	30.
78-93-3	2-BUTANONE (MEK)	ND	30.
	• •		
75-15-0	CARBON DISULFIDE	ND	5.
56-23-5	CARBON TETRACHLORIDE	ND	5.
108-90-7	CHLOROBENZENE	ND	5.
75-00-3	CHLOROETHANE	ND	30.
110-75-8	2-CHLOROETHYLVINYLETHER	ND	50.
67-66-3	CHLOROFORM	ND	5.
74-87-3	CHLOROMETHANE	ND	30.
108-41-8	CHLOROTOLUENE	ND	5.
_			
124-48-1	DIBROMOCHLOROMETHANE	ND	5.
95-50-1	1,2-DICHLOROBENZENE	ND	5.
541-73-1	1,3-DICHLOROBENZENE	ND	5.
	1,4-DICHLOROBENZENE	ND	5.
106-46-7			
75-34-3	1,1-DICHLOROETHANE	ND	5.
107-06-2	1,2-DICHLOROETHANE	ND	5.
75-35-4	1,1-DICHLOROETHYLENE	430.	5.
156-59-4	CIS-1,2-DICHLOROETHYLENE	7.	5.
156-60-5	TRANS-1,2-DICHLOROETHYLENE	9.	5.
78-87-5	1,2-DICHLOROPROPANE	ND	5.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	5.
10061-02-6	TRANS-1, 3-DICHLOROPROPENE	ND	5.
	· · · · · · · · · · · · · · · · · · ·	ND	5.
100-41-4	ETHYLBENZENE		
106-93-4	ETHYLENE DIBROMIDE	ND	5.
76-13-1	FREON-TF	ND	5.
119-78-6	2-HEXANONE	ND	30.
75-09-2	METHYLENE CHLORIDE	ND	30.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	30.
100-42-5	STYRENE	ND	5.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	5.
127-18-4	TETRACHLOROETHYLENE	ND	5.
109-99-9	TETRAHYDROFURAN	ND	30.
108-88-3	TOLUENE	ND	5.
71-55-6	1,1,1-TRICHLOROETHANE	160.	5.
79-00-5	1,1,2-TRICHLOROETHANE	ND	5.
	The state of the s		
79-01-6	TRICHLOROETHYLENE	240.	5.
75-69-4	TRICHLOROFLUOROMETHANE	ND	5.
108-05-4	VINYL ACETATE	ND	30.
75-01-4	VINYL CHLORIDE	ND	30.
95-47-6	TOTAL XYLENES	ND	5.

CLIENT:

WOODWARD-CLYDE

SAMPLE: WCC-8S-1A

WCAS JOB #: 13191

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

WCAS JOB #: 13191

SAMPLE: WCC-8S-1R

DATE RECEIVED: 07/13/89 RUN NUMBER: 13191V54

DATE EXTRACTED: 07/25/89
DATE ANALYZED: 07/25/89

SAMPLE AMOUNT: 5ML MATRIX: WATER

VOLATILE ORGANICS (EPA 624/8240) UNITS: UG/L (PPB)

CAS #	COMPOUND	CONCENTRATION	DET LIMIT
	1.635.415		<u></u>
67-64-1	ACETONE	ND	5.
71-43-2	BENZENE	ND	1.
75-27-4	BROMODICHLOROMETHANE	ND	1.
75 - 25-2	BROMOFORM	ND	1.
74-83-9	BROMOMETHANE	ND	5.
78-93-3	2-BUTANONE (MEK)	ND	5.
75-15-0			
	CARBON DISULFIDE	ND	1.
56-23-5	CARBON TETRACHLORIDE	ND	1.
108-90-7	CHLOROBENZENE	ND	1.
75-00-3	CHLOROETHANE	ND	5.
110-75-8	2-CHLOROETHYLVINYLETHER	ND	10.
67-66-3	CHLOROFORM	ND	1.
74-87-3	CHLOROMETHANE	ND	5.
108-41-8			1.
	CHLOROTOLUENE	ND	
124-48-1	DIBROMOCHLOROMETHANE	ND	1.
95-50-1	1,2-DICHLOROBENZENE	ND	1.
541-73-1	1,3-DICHLOROBENZENE	ND	1.
106-46-7	1,4-DICHLOROBENZENE	ND	1.
75-34-3	1,1-DICHLOROETHANE	ND	1.
107-06-2	1,2-DICHLOROETHANE	ND	1.
75-35-4			
	1,1-DICHLOROETHYLENE	ND	1.
156-59-4	CIS-1,2-DICHLOROETHYLENE	ND	1.
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	1.
78-87-5	1,2-DICHLOROPROPANE	ND	1.
10061-01-5		ND	1.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	1.
100-41-4	ETHYLBENZENE	ND	î.
106-93-4	ETHYLENE DIBROMIDE	ND	1.
76-13-1	FREON-TF	ND	1.
119-78-6	2-HEXANONE	ND	5.
75-09-2	METHYLENE CHLORIDE	ND	5.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	5.
100-42-5	STYRENE	ND	1.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	i.
127-18-4	TETRACHLOROETHYLENE	ND	1.
109-99-9	TETRAHYDROFURAN	ND	5.
108-88-3	TOLUENE	ND	1.
71-55-6	1,1,1-TRICHLOROETHANE	ND	1.
79-00-5	1,1,2-TRICHLOROETHANE	ND	1.
79-01-6	TRICHLOROETHYLENE	ND	ī.
75-69-4	TRICHLOROFLUOROMETHANE	ND	1.
108-05-4	VINYL ACETATE	ND	5.
75-01-4	VINYL CHLORIDE	ND	5.
95-47-6	TOTAL XYLENES	ND	1.

CLIENT:

WOODWARD-CLYDE

WCAS JOB #: 13191

SAMPLE: WCC-8S-1R

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

DATE RECEIVED: 07/13/89

WCAS JOB #: 13191

SAMPLE: WCC-10S-1A

RUN NUMBER: 13193V4

DATE EXTRACTED: 07/21/89 SAMPLE AMOUNT: 5ML DATE ANALYZED: 07/21/89 MATRIX: WATER

VOLATILE ORGANICS (EPA 624/8240) UNITS: UG/L (PPB)

CAS #	COMPOUND	CONCENTRATION	
67-64-1	ACETONE	 ND	5.
71-43-2	BENZENE	ND	1.
75-27-4	BROMODICHLOROMETHANE	ND	1.
75-25-2	BROMOFORM	ND	1.
74-83-9	BROMOMETHANE	ND	5.
78-93-3	2-BUTANONE (MEK)	ND	5.
75-15-0	CARBON DISULFIDE	ND	1.
56-23-5	CARBON TETRACHLORIDE	ND	ī.
108-90-7		ND	1.
75-00-3	CHLOROETHANE	. ND	5.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	10.
67-66-3	CHLOROFORM	3.	1.
74-87-3	CHLOROMETHANE	ND	5.
108-41-8	CHLOROTOLUENE	ND	1.
124-48-1	DIBROMOCHLOROMETHANE	ND	1.
95-50-1		ND	1.
541-73-1	1,3-DICHLOROBENZENE	ND	1.
106-46-7		ND	1.
75-34-3		ND	1.
107-06-2	1,2-DICHLOROETHANE	ND	1.
75-35-4	1,1-DICHLOROETHYLENE	2.	1.
156-59-4		ND	1.
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	1.
78-87-5	1,2-DICHLOROPROPANE	ND	1.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	1.
10061-02-6		ND	1.
100-41-4	ETHYLBENZENE	ND	1.
106-93-4	ETHYLENE DIBROMIDE	ND	1.
76-13-1	FREON-TF	ND	1.
119-78-6	2-HEXANONE	ND	5.
75-09-2	METHYLENE CHLORIDE	ND	5.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	5.
100-42-5	STYRENE	ND	1.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	1.
109-99-9	TETRAHYDROFURAN	ND	5.
108-88-3	TOLUENE	ND	1.
71-55-6	1,1,1-TRICHLOROETHANE	ND	1.
79-00-5	1,1,2-TRICHLOROETHANE	ND	1.
79-01-6	TRICHLOROETHYLENE	86.	1.
75-69-4	TRICHLOROFLUOROMETHANE	ND	1.
108-05-4	VINYL ACETATE	ND	5.
75-01-4	VINYL CHLORIDE	ND	5.
95-47-6	TOTAL XYLENES	ND	1.

CLIENT:

WOODWARD-CLYDE

WCAS JOB #: 13191

SAMPLE: WCC-10S-1A

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

WCAS JOB #: 13191

SAMPLE: WCC-10S-1B

DATE RECEIVED: 07/13/89

DATE EXTRACTED: 07/21/89 DATE ANALYZED: 07/21/89 RUN NUMBER: 13191V5 SAMPLE AMOUNT: 5ML MATRIX: WATER

VOLATILE ORGANICS (EPA 624/8240)

CAS #	COMPOUND	CONCENTRATION	DET LIMIT
67-64-1	ACETONE	ND	======================================
71-43-2	BENZENE	ND	1.
75-27-4	BROMODICHLOROMETHANE	ND	1.
75-25-2	BROMOFORM	ND	1.
74-83-9	BROMOMETHANE	ND	5.
78-93-3	2-BUTANONE (MEK)	ND	5.
75-15-0	CARBON DISULFIDE	ND	1.
56-23-5	CARBON TETRACHLORIDE	ND	1.
108-90-7	CHLOROBENZENE	ND	1.
75-00-3	CHLOROETHANE	ND ND	5.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	10.
67-66-3	CHLOROFORM	3.	1.
74-87-3	CHLOROMETHANE	ND	5.
108-41-8	CHLOROTOLUENE	ND	1.
124-48-1	DIBROMOCHLOROMETHANE	ND	1.
95-50-1	1,2-DICHLOROBENZENE	ND	1.
541-73-1	1,3-DICHLOROBENZENE	ND	1.
106-46-7	1,4-DICHLOROBENZENE	ND	1.
75-34-3	1,1-DICHLOROETHANE	ND	1.
107-06-2	1,2-DICHLOROETHANE	ND	1.
75-35-4	1,1-DICHLOROETHYLENE	1.	1.
156-59-4	CIS-1,2-DICHLOROETHYLENE	ND	1.
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	1.
78-87-5	1,2-DICHLOROPROPANE	ND	1.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	1.
10061-02-6	TRANS-1, 3-DICHLOROPROPENE	ND	1.
100-41-4	ETHYLBENZENE	ND	1.
106-93-4	ETHYLENE DIBROMIDE	ND	1.
76-13-1	FREON-TF	ND	1.
119-78-6	2-HEXANONE	ND	5.
75-09-2	METHYLENE CHLORIDE	ND	5.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	5.
100-42-5	STYRENE	ND	1.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	1.
127-18-4	TETRACHLOROETHYLENE	ND	1.
109-99-9	TETRAHYDROFURAN	ND	5.
108-88-3	TOLUENE	ND	1.
71-55-6	1,1,1-TRICHLOROETHANE	ND	1.
79-00-5	1,1,2-TRICHLOROETHANE	ND	1.
79-01-6	TRICHLOROETHYLENE	87.	1.
75-69-4	TRICHLOROFLUOROMETHANE	ND	1.
108-05-4	VINYL ACETATE	ND	5.
75-01-4	VINYL CHLORIDE	ND ND	5.
95-47-6	TOTAL XYLENES	ND ND	
-		מא	1.

CLIENT:

WOODWARD-CLYDE

WCAS JOB #: 13191

SAMPLE: WCC-10S-1B

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

WCAS JOB #: 13191

SAMPLE: WCC-10S-1R

DATE RECEIVED: 07/13/89

DATE EXTRACTED: 07/21/89 DATE ANALYZED: 07/21/89

RUN NUMBER: 13191V6

SAMPLE AMOUNT: 5ML MATRIX: WATER

VOLATILE ORGANICS (EPA 624/8240)

CAS #	COMPOUND	CONCENTRATION	DET LIMIT
67-64-1	ACETONE	ND	5.
71-43-2	BENZENE	ND	1.
75-27-4	BROMODICHLOROMETHANE	ND	1.
75-25-2	BROMOFORM	ND	1.
74-83-9	BROMOMETHANE	ND	5.
78-93-3	2-BUTANONE (MEK)	ND	5.
75-15-0	CARBON DISULFIDE	ND	1.
56-23-5	CARBON TETRACHLORIDE	ND	1.
108-90-7	CHLOROBENZENE	ND	1.
75-00-3	CHLOROETHANE	ND	5.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	10.
67-66-3	CHLOROFORM	ND	1.
74-87-3	CHLOROMETHANE	ND	5.
108-41-8	CHLOROTOLUENE	ND	1.
124-48-1	DIBROMOCHLOROMETHANE	ND	1.
95-50-1	1,2-DICHLOROBENZENE	ND	1.
541-73-1	1,3-DICHLOROBENZENE	ND	1.
106-46-7	1,4-DICHLOROBENZENE	ND	1.
75-34-3	1,1-DICHLOROETHANE	ND	1.
107-06-2	1,2-DICHLOROETHANE	ND	1.
75-35-4	- ,	ND	1.
156-59-4	CIS-1,2-DICHLOROETHYLENE	ND	1.
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	1.
78-87-5	1,2-DICHLOROPROPANE	ND	1.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	1.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	1.
100-41-4	ETHYLBENZENE	ND	1.
106-93-4	ETHYLENE DIBROMIDE	ND	1.
76-13-1	FREON-TF	ND	1.
119-78-6	2-HEXANONE	ND	5.
75-09-2	METHYLENE CHLORIDE	ND	5.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	5.
100-42-5	STYRENE	ND	1.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	1.
127-18-4	TETRACHLOROETHYLENE	ND	1.
109-99-9	TETRAHYDROFURAN	ND	5.
108-88-3	TOLUENE	ND	1.
71-55-6	1,1,1-TRICHLOROETHANE	ND	1.
79-00-5	1,1,2-TRICHLOROETHANE	ND	1.
79-01-6	TRICHLOROETHYLENE	ND	1.
75-69-4	TRICHLOROFLUOROMETHANE	ND	1.
108-05-4	VINYL ACETATE	ND	5.
75-01-4	VINYL CHLORIDE	ND	5.
95-47-6	TOTAL XYLENES	ND	1.

CLIENT:

WOODWARD-CLYDE

SAMPLE: WCC-10S-1R

WCAS JOB #: 13191

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

WCAS JOB #: 13191

SAMPLE: WCC-11S-1A

DATE RECEIVED: 07/13/89

DATE EXTRACTED: 07/25/89
DATE ANALYZED: 07/26/89

RUN NUMBER: 1

13191V63

SAMPLE AMOUNT: 5ML MATRIX: WATER

VOLATILE ORGANICS (EPA 624/8240)

CAS #	COMPOUND	CONCENTRATION	DET LIMIT
	·		
	•		
67-64-1	ACETONE	ИD	5.
71-43-2	BENZENE	ND	1.
75-27-4	BROMODICHLOROMETHANE	ND	1.
75-25-2	BROMOFORM	ND	1.
74-83-9	BROMOMETHANE	ND	5.
78-93-3	2-BUTANONE (MEK)	ND	5.
75-15-0	CARBON DISULFIDE	ND	1.
56-23-5	CARBON TETRACHLORIDE	ND	1.
•			1.
108-90-7	CHLOROBENZENE	ND	
75-00-3	CHLOROETHANE	ND	5.
110-75-8	2-CHLOROETHYLVINYLETHER	ND	10.
67-66-3	CHLOROFORM	ND	1.
74-87-3	CHLOROMETHANE	ND	5.
		ND	1.
108-41-8	CHLOROTOLUENE		1.
124-48-1	DIBROMOCHLOROMETHANE	ND	
95-50-1	1,2-DICHLOROBENZENE	ND	1.
541-73-1	1,3-DICHLOROBENZENE	ND	1.
106-46-7	1,4-DICHLOROBENZENE	ND	1.
75-34-3	1,1-DICHLOROETHANE	ND	1.
			i.
107-06-2	1,2-DICHLOROETHANE	ND	
75-35-4	1,1-DICHLOROETHYLENE	ND	1.
156-59-4	CIS-1,2-DICHLOROETHYLENE	ND	1.
156-60-5	TRANS-1, 2-DICHLOROETHYLENE	ND	1.
	• • • • • • • • • • • • • • • • • • •	ND	1.
78-87-5	1,2-DICHLOROPROPANE		1.
10061-01-5		ND	
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	1.
100-41-4	ETHYLBENZENE	ND	1.
106-93-4	ETHYLENE DIBROMIDE	ND	1.
76-13-1	FREON-TF	ND	1.
		ND	5.
119-78-6	2-HEXANONE		
75-09-2	METHYLENE CHLORIDE	ND	5.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	5.
100-42-5	STYRENE	ND	1.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	1.
		ND	1.
127-18-4	TETRACHLOROETHYLENE		
109-99-9	TETRAHYDROFURAN	ND	5.
108-88-3	TOLUENE	ND	1.
71-55-6	1,1,1-TRICHLOROETHANE	ND	1.
79-00-5	1,1,2-TRICHLOROETHANE	ND.	1.
	· · · · · · · · · · · · · · · · · · ·	ND	1.
79-01-6	TRICHLOROETHYLENE	•	
75-69-4	TRICHLOROFLUOROMETHANE	ND	1.
108-05-4	VINYL ACETATE	ND	5.
75-01-4	VINYL CHLORIDE	ND	5.
95-47-6	TOTAL XYLENES	ND	1.
JJ 41-0	tatin utmitma		

CLIENT:

WOODWARD-CLYDE

WCAS JOB #: 13191

SAMPLE: WCC-11S-1A

UNITS: UG/L (PPB)

COMPOUND NAME

APPROXIMATE FRACTION CONCENTRATION

1 NONE FOUND

	Woodward-	Clyde Consulta	ants 🕊	SHIPM	ENT NO.:
	CHAIN O	F CUSTODY RECO	ORD	_	OF
PROJE	CT NAME:	riat Airca.	Co	DATE.	7 1 25 7 89
		1863 J- TUS			
Sample Number Location	Type of Sample	Type of Container		Preservation	Analysis Required *
wcc-10-1A wc-10	Material Method WITEL BALLED	40.2k VOA	Temp	NUNE	
wcc.12.13	where barrey	10,22 004		1	
LCC-10-12					
WCC-10-15 V					
WCC-3D-1A WCC-3D			++-+		
WCC-3D-18					
UCC-30-15 V					
WCC-12D-1A WCC-12D		·	 		
WCC-12D-16 WCC-12D-1R			++-		
WCC-120-15	W V		1	V	
			-		
			+		
		·			
			 		
Total Number of Samples Shi	ipped: /Z Sample	r's Signature:	26/2	asper-	
Relinquished By:	Han-	Received By:	1	Machen.	Date
Printed Name / 15to	r Glassian	Signature Printed Name		ME PLLEND	2
Company A Reason & Collins	1 WCSC	Company	witi's	1/11- W	Time
Relinquished By: Signature		Received By:	<i>-</i> >	00 >0	Date
Signature Frinted Name FL'STEP II	A CALLWEN	Signature Printed Name	K/ max	ef (El)	71219
Company vistan-	(L./)E COMS	Company			Time
Reason		Received By:	0	<u></u>	Date
Relinquished By: SignatureRov	10, 12 11	Received By: Signature Be	000	en/	7/26/8
Printed Name		Printed Name Company	1 C 45	50/1	Time
Reason					11:40
Relinquished By: Signature		Received By: Signature			Date
Printed Name		Printed Name Company			Time
Reason					
Special Shipment / Handling	/ Storage Requirement	ts:	Sherma	114 82	5 6891
CONTACT . AL.	staine calende	u o rek o	10.71.00	- 11	<i>y</i>
* Note - This does not con	stitute authorization to	o proceed with analys	si s		

September 8, 1989

WOODWARD-CLYDE CONSULTANTS 203 N. Golden Circle Drive Santa Ana, CA 92705

Attn:

Peter Glaesman

JOB NO.

13533

WEST COAST ANALYTICAL SERVICE, INC.

ANALYTICAL CHEMISTS

Α

LABORATORY REPORT

Samples Received: Fifty-five (55) liquids

Date Received: 8-24-89

Purchase Order No: Proj#: 8941863J Task 1/Douglas Aircraft

The samples were analyzed as follows:

Samples Analyzed

Analysis

Results

Thirteen (13) liquids

Volatile Organics

by EPA 624

Data Sheets

Page 1 of 1

Michael Shelton Senior Chemist

B. Michael Hovanec Senior Staff Chemist

WCAS JOB #: 13533

SAMPLE: WCC-1D-2A

DATE RECEIVED: 08/24/89

DATE EXTRACTED: 09/06/89
DATE ANALYZED: 09/06/89

RUN NUMBER: 13533V16

SAMPLE AMOUNT: 5ML MATRIX: WATER

VOLATILE ORGANICS (EPA 624/8240)

CAS #	COMPONE	/ ··· (/	
========	COMPOUND ====================================	CONCENTRATION	DET LIMIT
6/-64-1	ACETONE		
71-43-2	BENZENE	ND	5.
75-27-4	BROMODICHLOROMETHANE	ND	1.
75 - 25 -2	BROMOFORM	ND	1.
74-83-9	BROMOMETHANE	ND	1.
78 - 93 - 3	2-BUTANONE (MEK)	ND	5.
75-15-0	CARBON DISULFIDE	ND	5.
56-23 -5	CARBON TETRACHLORIDE	ND	1.
108-90-7	CHLOROBENZENE	ND	1.
75-00 -3	CHLOROETHANE	ND	1.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	5.
67-66-3	CHLOROFORM	ND	10.
74-87-3	CHLOROMETHANE	ND	1.
108-41-8	CHLOROTOLUENE	ND	5.
124-48-1	DIBROMOCHLOROMETHANE	ND	1.
95-50-1	1,2-DICHLOROBENZENE	ND	1.
541-73-1	1,3-DICHLOROBENZENE	ND	1.
106-46-7	1,4-DICHLOROBENZENE	ND	1.
75-34-3	1,1-DICHLOROETHANE	ND	1.
107-06-2	1,2-DICHLOROETHANE	ND	1.
75-35-4	1 1-DICHLOROETHANE	ND ·	1.
156-59-4	1,1-DICHLOROETHYLENE	ND	1.
156-60-5	CIS-1,2-DICHLOROETHYLENE	ND	1.
78-87 - 5	TRANS-1, 2-DICHLOROETHYLENE	ND	i.
10061-01-5	1,2-DICHLOROPROPANE	ND	1.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	ĩ.
10001-02-6	TRANS-1, 3-DICHLOROPROPENE	ND	1.
106-93-4	ETHYLBENZENE	ND	1.
76-13-1	ETHYLENE DIBROMIDE	ND	1.
· · · · · · · · · · · · · · · · · · ·	FREON-TF	ND	1.
119-78-6	2-HEXANONE	ND	5.
75-09-2	METHYLENE CHLORIDE	ND	5. 5.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	5.
100-42-5	STYRENE	ND	
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	1.
127-18-4	TETRACHLOROETHYLENE	ND	1.
109-99-9	TETRAHYDROFURAN	ND	1.
108-88-3	TOLUENE		5.
71-55-6	1,1,1-TRICHLOROETHANE	ND	1.
79-00-5	1,1,2-TRICHLOROETHANE	1.	1.
79-01-6	TRICHLOROETHYLENE	ND	1.
75-69-4	TRICHLOROFLUOROMETHANE	2.	1.
108-05-4	VINYL ACETATE	ND	1.
75-01-4	VINYL CHLORIDE	ND	5.
95-47-6	TOTAL XYLENES	ND	5.
		ND	1.

CLIENT: WOODWARD-CLYDE CONSULTANTS

WCAS JOB #: 13533

SAMPLE: WCC-1D-2A

UNITS: UG/L (PPB)

COMPOUND NAME

APPROXIMATE FRACTION CONCENTRATION

1 NONE FOUND

WCAS JOB #: 13533

SAMPLE: WCC-1S-2A

DATE RECEIVED: 08/24/89
DATE EXTRACTED: 09/06/89

DATE ANALYZED: 09/06/89

RUN NUMBER: 13533V17 SAMPLE AMOUNT: 150UL MATRIX: WATER

VOLATILE ORGANICS (EPA 624/8240)

CAC #	2011		
CAS # =========	COMPOUND	CONCENTRATION	DET LIMIT
67-64-1	ACETONE		
71-43-2	BENZENE	ND	200.
75-27-4	BROMODICHLOROMETHANE	ND	30.
75-25-2	BROMOFORM	ND	30.
74-83-9	BROMOMETHANE	ND	30.
78-93-3	2-BUTANONE (MEK)	ND ND	200.
75-15-0	CARBON DISULFIDE	ND	200.
56-23-5	CARBON TETRACHLORIDE	ND	30.
108-90-7	CHLOROBENZENE	ND	30.
75-00 - 3	CHLOROETHANE	ND	30.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	200.
67-66-3	CHLOROFORM	ND	300.
74-87-3	CHLOROMETHANE	ND	30.
108-41-8	CHLOROTOLUENE	ND	200.
124-48-1	DIBROMOCHLOROMETHANE	ND	30.
95-50-1	1,2-DICHLOROBENZENE	ND	30.
541-73-1	1,3-DICHLOROBENZENE	ND	30.
106-46-7	1,4-DICHLOROBENZENE	ND	30.
75-34-3	1,1-DICHLOROETHANE	ND	30.
107-06-2	1,2-DICHLOROETHANE	ND	30.
75-35-4	1,1-DICHLOROETHYLENE	1500.	30.
156-59-4	CIS-1,2-DICHLOROETHYLENE	41.	30.
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	30.
78-87-5	1,2-DICHLOROPROPANE	ND	30.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	30.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	30.
100-41-4	ETHYLBENZENE	ND	30.
106-93-4	ETHYLENE DIBROMIDE	ND	30.
76-13-1	FREON-TF	ND ND	30.
119-78-6	2-HEXANONE	ND	30.
75-09-2	METHYLENE CHLORIDE	ND	200.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND ND	200.
100-42-5	STYRENE	ND ND	200.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	30.
127-18-4	TETRACHLOROETHYLENE	ND	30.
109-99-9	TETRAHYDROFURAN	ND	30.
108-88-3	TOLUENE		200.
71-55-6	1,1,1-TRICHLOROETHANE	ND	30.
79-00-5	1,1,2-TRICHLOROETHANE	ND ND	30.
79-01-6	TRICHLOROETHYLENE	2800.	30.
75-69-4	TRICHLOROFLUOROMETHANE		30.
108-05-4	VINYL ACETATE	ND ND	30.
75-01-4	VINYL CHLORIDE	ND	200.
95-47-6	TOTAL XYLENES	ND	200.
		ND	30.

CLIENT: WOODWARD-CLYDE CONSULTANTS

WCAS JOB #: 13533

SAMPLE: WCC-1S-2A

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

WCAS JOB #: 13533

SAMPLE: WCC-2S-2A

DATE RECEIVED: 08/24/89

DATE EXTRACTED: 09/06/89 DATE ANALYZED: 09/06/89 RUN NUMBER: 13533V18 SAMPLE AMOUNT: 5ML MATRIX:

VOLATILE ORGANICS (EPA 624/8240)

UNITS: UG/L (PPB)

WATER

CAS #	20175		~=====
	COMPOUND	CONCENTRATION	DET LIMIT
67-64-1	ACETONE		
71-43-2	BENZENE	ND	5.
75-27-4		ND	1.
75-25-2	BROMODICHLOROMETHANE	ND	1.
74-83-9	BROMOFORM	ND	1.
78-93 -3	BROMOMETHANE	ND	5.
75-15-0	2-BUTANONE (MEK)	ND	5.
-	CARBON DISULFIDE	ND	1.
56-23-5	CARBON TETRACHLORIDE	ND	
108-90-7	CHLOROBENZENE	ND	1.
75-00-3	CHLOROETHANE		1.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	5.
67-66-3	CHLOROFORM	ND	10.
74-87-3	CHLOROMETHANE	ND	1.
108-41-8	CHLOROTOLUENE	ND	5.
124-48-1	DIBROMOCHLOROMETHANE	ND	1.
95-50-1	1,2-DICHLOROBENZENE	ND	1.
541-73-1	1,3-DICHLOROBENZENE	ND	1.
106-46-7	1,5-DICHLOROBENZENE	ND	1.
75-34-3	1,4-DICHLOROBENZENE	ND	1.
107-06-2	1,1-DICHLOROETHANE	ND	1.
75-35-4	1,2-DICHLOROETHANE	ND	1.
	1,1-DICHLOROETHYLENE	ND	1.
156-59-4	CIS-1, 2-DICHLOROETHYLENE	ND	1.
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	
78-87-5	1,2-DICHLOROPROPANE		1.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	1.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	1.
100-41-4	ETHYLBENZENE	ND	1.
106-93-4	ETHYLENE DIBROMIDE	ND	1.
76-13 - 1	FREON-TF	ND	1.
119-78-6	2-HEXANONE	ND	1.
75-09-2	METHYLENE CHLORIDE	ND	5.
108-10-1	4 3455555555555555555555555555555555555	ND	5.
100-42-5	4-METHYL-2-PENTANONE (MIBK) STYRENE	ND	5.
79-34-5		ND	1.
127-18-4	1,1,2,2-TETRACHLOROETHANE	ND	ī.
	TETRACHLOROETHYLENE	ND	i.
109-99-9	TETRAHYDROFURAN	ND	5.
108-88-3	TOLUENE	ND	
71-55-6	1,1,1-TRICHLOROETHANE		1.
79-00-5	1,1,2-TRICHLOROETHANE	ND	1.
79-01-6	TRICHLOROETHYLENE	ND	1.
75-69-4	TRICHLOROFLUOROMETHANE	3.	1.
108-05-4	VINYL ACETATE	ND	1.
75-01-4	VINYL CHLORIDE	ND	5.
95-47-6	TOTAL XYLENES	ND	5.
	TOTAL VITENES	ND	1.

CLIENT: WOODWARD-CLYDE CONSULTANTS

WCAS JOB #: 13533

SAMPLE: WCC-25-2A

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

Data Reporting Qualifiers

- Value If the result is a value greater than or equal to the Detection Limit (DL), the value is reported.
- ND Indicates that the compound was analyzed for but not detected. The minimum DL for the sample with the ND is reported based on necessary concentration or dilution actions.
- TR Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the specified DL but greater than zero.

CLIENT: WOODWARD-CLYDE CONSULTANTS

SAMPLE: WCC-3D-1A

WCAS JOB #: 13290

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

WCAS JOB #: 13533

SAMPLE: WCC-3D-2A

DATE RECEIVED: 08/24/89 DATE EXTRACTED: 09/06/89

DATE ANALYZED: 09/06/89

RUN NUMBER:

13533V19

SAMPLE AMOUNT: 500UL MATRIX:

WATER

VOLATILE ORGANICS (EPA 624/8240)

CAS #	7.C. 4		(PPB)
=========	COMPOUND	CONCENTRATION	DET LIMIT
67-64-1	ACETONE		
71-43-2	BENZENE	ND	50.
75-27-4	BROMODICHLOROMETHANE	ND	10.
75-25 -2	BROMOFORM	ND	10.
74-83-9	BROMOMETHANE	ND	10.
78-93-3	2-BUTANONE (MEK)	ND	50.
75-15-0	CARBON DISULFIDE	ND	50.
56 -23-5	CARBON TETRACHLORIDE	ND	10.
108-90-7	CHLOROBENZENE	ND	10.
75-00-3	CHLOROETHANE	ND	10.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	50.
67-66-3	CHLOROFORM	ND	100.
74-87-3	CHLOROMETHANE	ND	10.
108-41-8	CHLOROTOLUENE	ND	50.
124-48-1	DIBROMOCHLOROMETHANE	ND	10.
95-50-1	1,2-DICHLOROBENZENE	ND	10.
541-73-1	1,3-DICHLOROBENZENE	ND	10.
106-46-7	1,4-DICHLOROBENZENE	ND	10.
75-34-3	1,1-DICHLOROETHANE	ND	10.
107-06-2	1,2-DICHLOROETHANE	ND	10.
75-35-4	1 1-DICHIOROETHANE	ND	10.
156-59-4	1,1-DICHLOROETHYLENE	ND	10.
156-60-5	CIS-1,2-DICHLOROETHYLENE	ND	10.
78-87-5	TRANS-1,2-DICHLOROETHYLENE	ND	10.
10061-01-5	1,2-DICHLOROPROPANE	ND	10.
10061-02-6	CIS-1,3-DICHLOROPROPENE	ND	10.
100-41-4	TRANS-1,3-DICHLOROPROPENE ETHYLBENZENE	ND	10.
106-93-4		ЙD	10.
76-13-1	ETHYLENE DIBROMIDE FREON-TF	ND	10.
119-78-6		ND	10.
75-09-2	2-HEXANONE	ND	50.
108-10-1	METHYLENE CHLORIDE	ND	50.
100-42-5	4-METHYL-2-PENTANONE (MIBK)	ND	50.
79-34-5	STYRENE	ND	10.
127-18-4	1,1,2,2-TETRACHLOROETHANE	ND	10.
109-99-9	TETRACHLOROETHYLENE	ND	10.
108-88-3	TETRAHYDROFURAN	ND	50.
71-55-6	TOLUENE	ND	10.
79-00-5	1,1,1-TRICHLOROETHANE	32.	10.
79-00-5	1,1,2-TRICHLOROETHANE	ND	10.
75-69-4	TRICHLOROETHYLENE	ND	10.
108-05-4	TRICHLOROFLUOROMETHANE	ND	10.
75-01-4	VINYL ACETATE	ND	50.
95-47-6	VINYL CHLORIDE	ND	50. 50.
33-4/ -6	TOTAL XYLENES	ND	10.
		•••	10.

CLIENT: WOODWARD-CLYDE CONSULTANTS

SAMPLE: WCC-3D-2A

WCAS JOB #: 13533

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

WCAS JOB #: 13533

SAMPLE: WCC-3S-2A

DATE RECEIVED: 08/24/89

DATE EXTRACTED: 09/06/89
DATE ANALYZED: 09/06/89

RUN NUMBER: 13533V20 SAMPLE AMOUNT: 5UL

SAMPLE AMOUNT: 5UL MATRIX: WATER

VOLATILE ORGANICS (EPA 624/8240)

 "			
CAS #	COMPOUND	CONCENTRATION	DET LIMIT
			DEI DIMII
67-64-1	ACETONE		
71-43-2	BENZENE	ND	5000.
75-27-4		ND	1000.
_	BROMODICHLOROMETHANE	ND	1000.
75-25-2	BROMOFORM	ND	1000.
74-83-9	BROMOMETHANE	ND	5000.
78-93 - 3	2-BUTANONE (MEK)	ND	5000.
75-15-0	CARBON DISULFIDE	ND	1000.
56-23-5	CARBON TETRACHLORIDE		
108-90-7	CHLOROBENZENE	ND	1000.
75-00-3	CHLOROETHANE	ND	1000.
110-75-8		ND	5000.
	2-CHLOROETHYLVINYL ETHER	ND	10000.
67-66-3	CHLOROFORM	ND	1000.
74-87-3	CHLOROMETHANE	ND	5000.
108-41-8	CHLOROTOLUENE	ND	1000.
124-48-1	DIBROMOCHLOROMETHANE	ND	1000.
95-50-1	1,2-DICHLOROBENZENE	ND	
541-73-1	1,3-DICHLOROBENZENE		1000.
106-46-7	1,4-DICHLOROBENZENE	ND	1000.
75-34-3	1,1-DICHLOROETHANE	ND	1000.
107-06-2		ND	1000.
75-35-4	1,2-DICHLOROETHANE	ND	1000.
	1,1-DICHLOROETHYLENE	56000.	1000.
156-59-4	CIS-1,2-DICHLOROETHYLENE	ND	1000.
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	1000.
78-87-5	1,2-DICHLOROPROPANE	ND	1000.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	1000.
10061-02-6	TRANS-1,3-DICHLOROPROPENE		
100-41-4	ETHYLBENZENE	ND	1000.
106-93-4	ETHYLENE DIBROMIDE	ND	1000.
76-13-1	FREON-TF	ND	1000.
119-78-6		ND	1000.
	2-HEXANONE	ND	5000.
75-09-2	METHYLENE CHLORIDE	ND	5000.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	5000.
100-42-5	STYRENE	ND	1000.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	1000.
127-18-4	TETRACHLOROETHYLENE		
109-99-9	TETRAHYDROFURAN	ND	1000.
108-88-3	TOLUENE	ND	5000.
71-55-6		56000.	1000.
·	1,1,1-TRICHLOROETHANE	78000.	1000.
79-00-5	1,1,2-TRICHLOROETHANE	ND	1000.
79-01-6	TRICHLOROETHYLENE	6000.	1000.
75-69-4	TRICHLOROFLUOROMETHANE	ND	1000.
108-05-4	VINYL ACETATE	ND	5000.
75-01-4	VINYL CHLORIDE	ND	5000.
95-47-6	TOTAL XYLENES	ND	1000.
		ND	1000.

CLIENT: WOODWARD-CLYDE CONSULTANTS SAMPLE: WCC-3S-2A

WCAS JOB #: 13533

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 UNIDENTIFIED COMPOUND

VOA

10000.

WCAS JOB #: 13533

SAMPLE: WCC-3S-2R

DATE RECEIVED: 08/24/89

DATE EXTRACTED: 09/06/89 DATE ANALYZED: 09/06/89 RUN NUMBER: 13533V21

SAMPLE AMOUNT: 5ML MATRIX: WATER

VOLATILE ORGANICS (EPA 624/8240)

CAS #	COMPOUND	CONCENTRATION	DET LIMIT
67-64-1	ACETONE	ND	5.
71-43-2	BENZENE	ND	1.
75-27-4	BROMODICHLOROMETHANE	ND	1.
75-2 5-2	BROMOFORM	ND	1.
74-83-9	BROMOMETHANE	ND	5.
78-93 -3	2-BUTANONE (MEK)	ND	5.
75-15-0	CARBON DISULFIDE	ND	1.
56-23-5	CARBON TETRACHLORIDE	ND	1.
108 -90- 7	CHLOROBENZENE	ND	1.
75-00-3	CHLOROETHANE	ND	5.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	10.
67-66-3	CHLOROFORM	ND	1.
74-87-3	CHLOROMETHANE	ND	5.
108-41-8	CHLOROTOLUENE	ND	1.
124-48-1	DIBROMOCHLOROMETHANE	ND	1.
95-50-1	1,2-DICHLOROBENZENE	ND	1.
541-73-1	1,3-DICHLOROBENZENE	ND	1.
106-46-7	1,4-DICHLOROBENZENE	ND	1.
75-34-3	1,1-DICHLOROETHANE	ND	1.
107-06-2	1,2-DICHLOROETHANE	ND	1.
75-35-4	1,1-DICHLOROETHYLENE	ND	1.
156-59-4	CIS-1,2-DICHLOROETHYLENE	ND	1.
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	1.
78-87-5	1,2-DICHLOROPROPANE	ND	1.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	1.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	1.
100-41-4	ETHYLBENZENE	ND	1.
106-93-4	ETHYLENE DIBROMIDE	ND	1.
76-13-1	FREON-TF	ND	1.
119-78-6	2-HEXANONE	ND	5.
75-09-2	METHYLENE CHLORIDE	ND	5.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	5.
100-42-5	STYRENE	ND	
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND ND	1.
127-18-4	TETRACHLOROETHYLENE	ND	1.
109-99-9	TETRAHYDROFURAN		1.
108-88-3	TOLUENE	ND	5.
71-55-6	1,1,1-TRICHLOROETHANE	ND	1.
79-00-5	1,1,2-TRICHLOROETHANE	ND	1.
79-01-6	TRICHLOROETHYLENE	ND	1.
75-69-4	TRICHLOROFLUOROMETHANE	ND	1.
108-05-4	VINYL ACETATE	ND	1.
75-01-4	VINIL ACETATE VINYL CHLORIDE	ND	5.
95-47 -6		ND	5.
JUNE 1-0	TOTAL XYLENES	ND	1.

CLIENT: WOODWARD-CLYDE CONSULTANTS

WCAS JOB #: 13533

SAMPLE: WCC-3S-2R

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

WCAS JOB #: 13533

SAMPLE: WCC-4S-2A

DATE RECEIVED: 08/24/89

DATE EXTRACTED: 09/06/89 DATE ANALYZED: 09/06/89 RUN NUMBER:

13533V22

SAMPLE AMOUNT: 1ML MATRIX:

WATER

VOLATILE ORGANICS (EPA 624/8240)

	•		
CAS #	COMPOUND	CONCENTRATION	
67-64-1	ACETONE	ND	30.
71-43-2	BENZENE	ND	5.
75-27-4	BROMODICHLOROMETHANE	ND	5.
75-25-2	BROMOFORM	ND	5.
74-83-9	BROMOMETHANE	ND	30.
78-93-3	2-BUTANONE (MEK)	ND	30.
75-15-0	CARBON DISULFIDE	ND	5.
56-23-5	CARBON TETRACHLORIDE	ND	5.
108-90-7	CHLOROBENZENE	ND	5.
75-00-3	CHLOROETHANE	ND	30.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	50.
67-66-3	CHLOROFORM	ND	5.
74-87-3	CHLOROMETHANE	ND	30.
108-41-8	CHLOROTOLUENE	ND	5.
124-48-1	DIBROMOCHLOROMETHANE	ND	5.
95-50-1	1,2-DICHLOROBENZENE	ND	5.
541-73-1	1,3-DICHLOROBENZENE	ND	5.
106-46-7	1,4-DICHLOROBENZENE	ND	5.
75-34-3	1,1-DICHLOROETHANE	ND	5.
107-06-2	1,2-DICHLOROETHANE	ND	5.
75-35-4	1,1-DICHLOROETHYLENE	360.	5.
156-59-4	CIS-1,2-DICHLOROETHYLENE	15.	5.
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	5.
78-87 - 5	1,2-DICHLOROPROPANE	ND	5.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	5.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	5.
100-41-4	ETHYLBENZENE	ND	5.
106-93-4	ETHYLENE DIBROMIDE	ND	5.
76-13-1	FREON-TF	ND	5.
119-78-6	2-HEXANONE	ND	30.
75-09-2	METHYLENE CHLORIDE	ND	30.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	30.
100-42-5	STYRENE	ND	5.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	5.
127-18-4	TETRACHLOROETHYLENE	ND	5.
109-99-9	TETRAHYDROFURAN	ND	30.
108-88-3	TOLUENE	ND	5.
71-55-6	1,1,1-TRICHLOROETHANE	7.	5.
79-00-5	1,1,2-TRICHLOROETHANE	ND	5.
79-01-6	TRICHLOROETHYLENE	410.	5.
75-69-4	TRICHLOROFLUOROMETHANE	ND	5.
108-05-4	VINYL ACETATE	ND	30.
75-01-4	VINYL CHLORIDE	ND	30.
95-47-6	TOTAL XYLENES	ND	5.

CLIENT: WOODWARD-CLYDE CONSULTANTS

WCAS JOB #: 13533

SAMPLE: WCC-4S-2A

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 UNIDENTIFIED COMPOUND

VOA

300.

WCAS JOB #: 13533

SAMPLE: WCC-5S-2A

RUN NUMBER: 13533V29

DATE RECEIVED: 08/24/89 DATE EXTRACTED: 09/06/89 DATE ANALYZED: 09/06/89

SAMPLE AMOUNT: 5ML MATRIX: WATER

VOLATILE ORGANICS (EPA 624/8240)

CAS #	COMPOUND	CONCENTRATION	DET LIMIT
67-64-1	ACETONE	иD	5.
71-43-2	BENZENE	ND	1.
75-27-4	BROMODICHLOROMETHANE	ND	1.
75-25-2	BROMOFORM	ND	1.
74-83-9	BROMOMETHANE	ND	5.
78-93-3	2-BUTANONE (MEK)	ND	5.
75-15-0	CARBON DISULFIDE	ND	1.
56-23-5	CARBON TETRACHLORIDE	ND	1.
108-90-7	CHLOROBENZENE	ND	1.
75-00-3	CHLOROETHANE	ND	5.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	10.
67-66-3	CHLOROFORM	ND	1.
74-87-3	CHLOROMETHANE	ND	5.
108-41-8	CHLOROTOLUENE	ND	1.
124-48-1	DIBROMOCHLOROMETHANE	ND	1.
95-50-1	1,2-DICHLOROBENZENE	ND	1.
541-73-1	1,3-DICHLOROBENZENE	ND	1.
106-46-7	1,4-DICHLOROBENZENE	ND	1.
75-34-3	1,1-DICHLOROETHANE	ND	1.
107-06-2	1,2-DICHLOROETHANE	ND	1.
75-35-4	1,1-DICHLOROETHYLENE	ND	1.
156-59-4	CIS-1,2-DICHLOROETHYLENE	4.	1.
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	1.
78-87-5	1,2-DICHLOROPROPANE	ND	1.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	1.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	1.
100-41-4	ETHYLBENZENE	ND	1.
106-93-4	ETHYLENE DIBROMIDE	ND	1.
76-13 - 1	FREON-TF	ND	1.
119-78-6	2-HEXANONE	ND	5.
75-09-2	METHYLENE CHLORIDE	ND	5.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	5.
100-42-5	STYRENE	ND	1.
79-34 - 5	1,1,2,2-TETRACHLOROETHANE	ND	1.
127-18-4	TETRACHLOROETHYLENE	ND	1.
109-99-9	TETRAHYDROFURAN	ND	5.
108-88-3	TOLUENE	ND	1.
71-55-6	1,1,1-TRICHLOROETHANE	ND	1.
79-00-5	1,1,2-TRICHLOROETHANE	ND	1.
79-01-6	TRICHLOROETHYLENE	12.	1.
75-69-4	TRICHLOROFLUOROMETHANE	ND	1.
108-05-4	VINYL ACETATE	ND	5.
75-01 -4	VINYL CHLORIDE	ND	5.

CLIENT: WOODWARD-CLYDE CONSULTANTS

WCAS JOB #: 13533

SAMPLE: WCC-5S-2A

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

CLIENT: WOODWARD-CLYDE CONSULTANTS SAMPLE: WCC-5S-2R

WCAS JOB #: 13533

DATE RECEIVED: 08/24/89 DATE EXTRACTED: 09/06/89

DATE ANALYZED: 09/06/89

RUN NUMBER:

13533V24

SAMPLE AMOUNT: 5ML MATRIX:

WATER

VOLATILE ORGANICS (EPA 624/8240)

CAS #	COMPOUND	CONCENTRATION	DET LIMIT
67-64-1	ACETONE	ND	5.
71-43-2	BENZENE	ND	1.
75-27-4	BROMODICHLOROMETHANE	ND	î.
75-25-2	BROMOFORM	ND	1.
74-83-9	BROMOMETHANE	ND	5.
78-93 - 3	2-BUTANONE (MEK)	ND	5.
75-15-0	CARBON DISULFIDE	ND	1.
56-23-5	CARBON TETRACHLORIDE	ND	1.
108-90-7	CHLOROBENZENE	ND	1.
75-00-3	CHLOROETHANE	ND	5.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	10.
67-66-3	CHLOROFORM	ND	1.
74-87-3	CHLOROMETHANE	ND	5.
108-41-8	CHLOROTOLUENE	ND	1.
124-48-1	DIBROMOCHLOROMETHANE	ND	1.
95-50-1	1,2-DICHLOROBENZENE	ND	1.
541-73-1	1,3-DICHLOROBENZENE	ND	1.
106-46-7	1,4-DICHLOROBENZENE	ND	1.
75-34-3	1,1-DICHLOROETHANE	ND	1.
107-06-2	1,2-DICHLOROETHANE	ND	1.
75-35-4	1,1-DICHLOROETHYLENE	ND	1.
156-59-4	CIS-1,2-DICHLOROETHYLENE	ND	1.
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	ī.
78-87 - 5	1,2-DICHLOROPROPANE	ND	1.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	1.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	1.
100-41-4	ETHYLBENZENE	ND	1.
106-93-4	ETHYLENE DIBROMIDE	ND	1.
76-13-1	FREON-TF	ND	1.
119-78-6	2-HEXANONE	ND	5.
75-09-2	METHYLENE CHLORIDE	ND	5.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	5.
100-42-5	STYRENE	ND	1.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	1.
127-18-4	TETRACHLOROETHYLENE	ND	1.
109-99-9	TETRAHYDROFURAN	ND	5.
108-88-3	TOLUENE	ND	1.
71-55 - 6	1,1,1-TRICHLOROETHANE	ND	1.
79-00-5	1,1,2-TRICHLOROETHANE	ND	1.
79-01-6	TRICHLOROETHYLENE	ND	1.
75-69-4	TRICHLOROFLUOROMETHANE	ND	1.
108-05-4	VINYL ACETATE	ND	5.
75-01-4	VINYL CHLORIDE	ND	5.
95-47-6	TOTAL XYLENES	ND	1.

CLIENT: WOODWARD-CLYDE CONSULTANTS

WCAS JOB #: 13533

SAMPLE: WCC-5S-2R

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

Data Reporting Qualifiers

- Value If the result is a value greater than or equal to the Detection Limit (DL), the value is reported.
- ND Indicates that the compound was analyzed for but not detected. The minimum DL for the sample with the ND is reported based on necessary concentration or dilution actions.
- TR Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the specified DL but greater than zero.

13111.72

Woodward-Clyde Consultants



SHIPMENT NO.:

CHAIN OF	CUSTODY	RECORD
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PAGE_/_OF_Z

PROJECT NAME: Daylas Aircrafi Co./C6

PROJECT NO.: 8941862 J-TASK

DATE 7 1121 89

-		PROJE	CT NO.:	894	186 < J-1ASK					
ı	Sample Number	Location	Type of	Sample	Tuna of Cantainas	Туре	of Preserva	tion	نور رام م	. B
	Sample Number	Location	Material	Method	Type of Container	Temp	Chemic		Anaiysi	s Required *
-	WCG-15-1A	WC-15	WATER	BAILER	40 MR UDA	KE	NON	-	CONTA	. СТ:
	WCC-15-18	T		1	1					KIP CAKINGLE
_	WCC-15-1C				40 glass				, ,	375-686
1	WCC-15-IR				40 me VA				F 77	2.7 9.02
	WCC-28-14					1 7		<u>-</u>		
上						+ +				
1	WCC-25-18	1 F			1 26	+ +				
7	UCC-25-15	T			4 02. 9K55	+ +				
1	Mc-25-1R			-	40 ~ VOA	+ +				
}	WCC -35-1A	MCC-32				+ +-		·		
_	WCK-35-1B				V	+ +			-	
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1	WC-35-1R	V			40 12 VUA	1				·····
	WCC-45-1A	WCC-45				11			ļ	
	WKL-45-1B				Y					
4	WCC-451C				9 02. 9 USS					
-[WCC-45-1R	V	_		qual VOA					
{	WC-55-1A	WCC-55								
-	WCC-55-1R				V					
-[ucc-55-10	1 5 I			4 02. glass	1 1.				
-[WCC-55-1R			V	40 LE VOA	T_V	0.4			
Ī	Total Number of S		pped: 38	Sample	's Signature:	1/2	da			
ſ	Relinquished By:	21 9	Way.		Received By:	7) -/	10			Date
-	Signature	1000/1			Signature		Karek			7113189
-	Printed Nance	I'GRE	Glass	<u></u>	Printed Name		Pazick 4-1			Time
-	Company Reason +	analy ?	- L	WCAS	Company		7-/			9:05
ŀ	Relinquished By: /		87.to		Received By:	- GT	7 [1 .		Date
١	Signature	Raic	e		Signature	milk	ichas	<u> </u>		7/13/8
	Printed Name				Printed Name	APY	-IL RIC	HAR	25_	Time
ı	Company Reason	7 5 / ild	PEN		Company	NCAS	lo 1	31	91	17:10
ŀ		UELIVE			Pageinad Son				_	Date
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	Printed Name				Printed Name					
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	Signature Printed Name				Signature Printed Name					
Į	Company				_ Company					Time
	Reason									
ſ	Special Shipment /	Handling .	/ Storage R	equirement	is:					

* Note - This does not constitute authorization to proceed with analysis

	•	Woo	dward-	Clyde Consulta	ants (_	MENT NO.:_6	1
		c	HAIN OF	CUSTODY RECO	RD	PAGE	20F2	
PROJECT NAME: Dougle Arcial Co./C6 DATE 7/12/89								2
	PROJEC	T NAME:	Dougla	C AMIRT C	0./	-6		
	PROJEC	CT NO.:	59418	563) - TUSK	1			
Sample Number	Location	Type of	Sample	Type of Container		of Preservation	Analysis Red	quired *
		Material	Method		Temp	Chemical AUTE	CHKT	
WCC - 75-1A		Work	BAILTE	40 mé VOA	KE	10/45	N.Skine	
~(C-75-18		-		4 oz alest	 		(7.4) 835	
WCC -75-1C			 	4 oz gluss	++		77.17.37	
WCC-75-1R WCC-85-1A				TO THE COL				
WCC-85-1B	WCC-SS			1				
WCC-85-16				4 02. glass				
WCC-85-18				40 ne von				
WCC-105-1A						ļ		
WCC-105-1B				V ,	 			
WCC-105-1C	 			407. 9655				<u> </u>
LICC-105-1R	W	<u> </u>		40 2 004	+-+			
WC-115-1A		 		<u></u>	 	+ +		
WCC-115-1B		 	+ + -	4 02 4/15	+ +			
WC -115-10			1	4 02. 1650 40 Ne VOA	+ +			
WCC-115-1R			575	10 112 001				
D.I.B	13.7	1	125		1	Ψ		
002-0	-				*	34		
					0/	100		
Total Number of	Samples Sh	ipped: 38	Sample	r's Signature:	Sel.	30		
Relinquished By:	Q1	5 Bles	11-	Received By:	Tring.	Rick		Date 13 89
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Company		KC,		Company	•			9:05
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Company Reason	DE/ JUE	PED		Company	WC/S	h1319	1	17:10
Relinguished By:				Received By:				Date
Signature			Signature				<u>//</u>	
Printed Name Company				Printed Name_ Company	-			Time
Reason								
Relinquished By:				Received By:				Date / /
Signature Printed Name				Signature Printed Name_				Time
Company				Company				111118
Reason				<u>L</u>				
Special Shipment	/ Handling	/ Storage	Requiremen	115:				

August 9, 1989

RECEIVED

C131 O 1 BUA

WCC-SANTA ANA

WCTS
WEST COAST

WOODWARD-CLYDE CONSULTANTS 203 N. Golden Circle Drive Santa Ana, CA 92705

Attn:

Dr. Alistaire Callender

JOB NO.

13290

WEST COAST ANALYTICAL SERVICE, INC.

A

LABORATORY REPORT

Samples Received: Twelve (12) waters

Date Received: 7-26-89

Date Released for Analysis: 8-7-89

Purchase Order No: Proj#: 8941863J/Task 1-Douglas Aircraft

The samples were analyzed as follows:

Samples Analyzed

Analysis

Results

Two (2) waters

Volatile Organics

by EPA 624

Data Sheets

Page 1 of 1

Michael Shelton

Senior Chemist

J. Northington, Ph.D. Technical Director

9840 Alburtis Avenue • Santa Fe Springs, California 90670 • 213/948-2225

CLIENT: WOODWARD-CLYDE CONSULTANTS

WCAS JOB #: 13290

SAMPLE: WCC-1D-1A

DATE RECEIVED: 07/26/89 DATE EXTRACTED: 08/08/89

DATE EXTRACTED: 08/08/89
DATE ANALYZED: 08/08/89

RUN NUMBER: 13290V1
SAMPLE AMOUNT: 5ML
MATRIX: WATER

VOLATILE ORGANICS (EPA 624/8240)

UNITS: UG/L (PPB)

CAS #	COMPOUND	CONCENTRATION	DET LIMIT
67-64-1	ACETONE	ND	5.
71-43-2	BENZENE	ND	1.
75-27-4	BROMODICHLOROMETHANE	ND	1.
75-25-2	BROMOFORM	ND	1.
74-83-9	BROMOMETHANE	ND	5.
78-93-3	2-BUTANONE (MEK)	ND	5.
75-15-0	CARBON DISULFIDE	ND	1.
56-23-5	CARBON TETRACHLORIDE	ND	1.
108-90-7	CHLOROBENZENE	ND	1.
75-00-3	CHLOROETHANE	ND	5.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	10.
67-66-3	CHLOROFORM	ND	1.
74-87-3	CHLOROMETHANE	ND	5.
108-41-8	CHLOROTOLUENE	ND	1.
124-48-1	DIBROMOCHLOROMETHANE	ND	1.
95-50-1	1,2-DICHLOROBENZENE	ND	1.
541-73-1		ND	1.
106-46-7	•	ND	1.
75-34-3	1,1-DICHLOROETHANE	ND	1.
107-06-2	1,2-DICHLOROETHANE	ND	1.
75-35-4	1,1-DICHLOROETHYLENE	ND	1.
156-59-4	CIS-1,2-DICHLOROETHYLENE	ND	1.
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	1.
78-87-5	1,2-DICHLOROPROPANE	ND	1.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	1.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	1.
100-41-4	ETHYLBENZENE	ND	1.
106-93-4	ETHYLENE DIBROMIDE	ND	1.
76-13-1	FREON-TF	ND	1.
119-78-6	2-HEXANONE	ND	5.
75-09-2	METHYLENE CHLORIDE	ND	5.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	5.
100-42-5	STYRENE	ND	1.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	1.
127-18-4	TETRACHLOROETHYLENE	ND	1.
109-99-9	TETRAHYDROFURAN	5.	5.
108-88-3	TOLUENE	1.	1.
71-55-6	1,1,1-TRICHLOROETHANE	ND	1.
79-00-5	1,1,2-TRICHLOROETHANE	ND	1.
79-01-6	TRICHLOROETHYLENE	2.	1.
75-69-4	TRICHLOROFLUOROMETHANE	ND	1.
108-05-4	VINYL ACETATE	ND	5.
75-01-4	VINYL CHLORIDE	ND	5.
95-47-6	TOTAL XYLENES	ND	1.

CLIENT: WOODWARD-CLYDE CONSULTANTS

SAMPLE: WCC-1D-1A

WCAS JOB #: 13290

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

CLIENT: WOODWARD-CLYDE CONSULTANTS

WCAS JOB #: 13290

SAMPLE: WCC-3D-1A

DATE RECEIVED: 07/26/89 DATE EXTRACTED: 08/08/89 DATE ANALYZED: 08/08/89 RUN NUMBER: 13290V2 SAMPLE AMOUNT: 5ML WATER MATRIX:

DATE ANALYZED): 08/08/89				
		UNITS: UG/L (PPB)			
VOLATILE ORGA	OLATILE ORGANICS (EPA 624/8240)		T LIMIT		
CAS #	COMPOUND	CONCENTRATION DE	=======		
=======================================		ND	5. 1.		
67-64-1	ACETONE	ND	1.		
71-43-2	BENZENE	ND	1.		
75-27-4	BROMODICHLOROMETHANE	ND	5.		
75-25-2	BROMOFORM	ND	5.		
74-83-9	BROMOMETHANE	ND			
78-93-3	2-BUTANONE (MEK)	ND	1.		
75-15-0	CARBON DISULFIDE	ND	1.		
56-23-5	CARBON TETRACHLORIDE	ND	1.		
108-90-7	CHLOROBENZENE	ND	5.		
75-00-3	ODOEMUANE	ND	10.		
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	1.		
67-66-3	CHLOROFORM	ND	5.		
74-87-3	CHLOROMETHANE	ND	1.		
	CULOPOTOLUENE	ND	1.		
108-41-8	DIBROMOCHLOROMETHANE	ND	1.		
124-48-1	1 2-DICHLOROBENZENE	ND	1.		
95-50-1	1 3-DICHLOROBENZENE	ND	1.		
541-73-1	1 A-DICHLOROBENZENE	ND	1.		
106-46-7	1,1-DICHLOROETHANE	ND	1.		
75-34-3	1 2-DICHLOROETMANE	ND	1.		
107-06-2	- 1 DICULOPOETHY LENE	11.	1.		
75-35-4	are 1 2-DICHTOROUTHIADNE	ND	1.		
156-59-4	TRANS-1, 2-DICHLOROETHYLENE	ND	1.		
156-60-5		ND	1.		
78-87-5	CTC 1 2-DICHIOROPROPENE	ND	1.		
10061-01-5	TRANS-1,3-DICHLOROPROPENE	ND	1.		
10061-02-6	ETHYLBENZENE	ND	1.		
100-41-4	ETHYLENE DIBROMIDE	ND	1.		
106-93-4	ELHATENE DIDICITED	ND	5.		
76-13-1	FREON-TF	ND ND	5.		
119-78-6	2-HEXANONE	ND	5.		
75-09-2	METHYLENE CHLORIDE METHYLENE CHLORIDE (MIBK)		1.		
108-10-1	4-METHIT-2-PENISHON	ND	ī.		
100-42-5	STYRENE 1,1,2,2-TETRACHLOROETHANE	DN	1.		
79-34-5	1,1,2,2-TETRACHIOROZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZ	ND	5.		
127-18-4	TETRACHLOROETHYLENE	ND	1.		
109-99-9	TETRAHYDROFURAN	3.	1.		
108-88-3	TOLUENE	49.	1.		
71-55-6	1,1,1-TRICHLOROETHANE	ND	1.		
79-00-5	1,1,2-TRICHLOROETHANE	4.	1.		
79-01-6	MPTCHTOROETHYLENE	ND			
75-69-4	TRICHLOROFLUOROMETHANE	ND	5.		
108-05-4	VINYL ACETATE	ND	•		
75-01-4	VINYL CHLORIDE	ND	1.		
95-47-6	TOTAL XYLENES				
75-4/-0					

CLIENT: WOODWARD-CLYDE CONSULTANTS

WCAS JOB #: 13533

DATE RECEIVED: 08/24/89

DATE EXTRACTED: 09/06/89

DATE ANALYZED: 09/06/89

RUN NUMBER: 13533V25

SAMPLE: WCC-7S-2A

SAMPLE AMOUNT: 200UL MATRIX:

WATER

VOLATILE ORGANICS (EPA 624/8240)

UNITS: UG/L (PPB)

(
CAS #	COMPOUND	CONCENTRATION			
67-64-1	ACETONE	ND	100.		
71-43-2	BENZENE	ND	30.		
75-27-4	BROMODICHLOROMETHANE	ND	30.		
75 - 25 -2	BROMOFORM	ND	30.		
74-83 -9	BROMOMETHANE	ND	100.		
78-93-3	2-BUTANONE (MEK)	ND	100.		
75-15-0	CARBON DISULFIDE	ND	30.		
56-23-5	CARBON TETRACHLORIDE	ND	30.		
108-90-7	CHLOROBENZENE	ND	30.		
75-00-3	CHLOROETHANE	ND	100.		
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	300.		
67-66-3	CHLOROFORM	ND	30.		
74-87-3	CHLOROMETHANE	ND	100.		
108-41-8	CHLOROTOLUENE	ND	30.		
124-48-1	DIBROMOCHLOROMETHANE	ND	30.		
95-50-1	1,2-DICHLOROBENZENE	ND	30.		
541-73-1	1,3-DICHLOROBENZENE	ND	30.		
106-46-7	1,4-DICHLOROBENZENE	ND	30.		
75-34-3	1,1-DICHLOROETHANE	ND	30.		
107-06-2	1,2-DICHLOROETHANE	ND	30.		
75-35-4	1,1-DICHLOROETHYLENE	1100.	30.		
156-59-4	CIS-1,2-DICHLOROETHYLENE	31.	30.		
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	30.		
78-87 - 5	1,2-DICHLOROPROPANE	ND	30.		
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	30.		
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	30.		
100-41-4	ETHYLBENZENE	ND	30.		
106-93-4	ETHYLENE DIBROMIDE	ND	30.		
76-13-1	FREON-TF	ND	30.		
119-78-6	2-HEXANONE	ND	100.		
75-09-2	METHYLENE CHLORIDE	ND	100.		
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	100.		
100-42-5	STYRENE	ND	30.		
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	30.		
127-18-4	TETRACHLOROETHYLENE	ND	30.		
109-99-9	TETRAHYDROFURAN	ND	100.		
109-99-9	TOLUENE	ND	30.		
71-55-6	1,1,1-TRICHLOROETHANE	66.	30.		
79 - 00 - 5	1,1,2-TRICHLOROETHANE	ND	30.		
79-00 - 5 79-01 - 6	TRICHLOROETHYLENE	1400.	30.		
75-69-4	TRICHLOROETHILENE	ND	30.		
108-05-4	VINYL ACETATE	ND	100.		
	VINYL ACETATE VINYL CHLORIDE	ND	100.		
75-01-4		ND	30.		
95-47-6	TOTAL XYLENES	ND	50.		

CLIENT: WOODWARD-CLYDE CONSULTANTS

RD-CLYDE CONSULTANTS SAMPLE: WCC-7S-2A

WCAS JOB #: 13533

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

CLIENT: WOODWARD-CLYDE CONSULTANTS

WCAS JOB #: 13533

SAMPLE: WCC-8S-2A

DATE RECEIVED: 08/24/89

DATE EXTRACTED: 09/06/89 DATE ANALYZED: 09/06/89

RUN NUMBER: 13533V26

SAMPLE AMOUNT: 1ML MATRIX: WATER

VOLATILE ORGANICS (EPA 624/8240)

UNITS: UG/L (PPB)

CAS #	COMPOUND	CONCENTRATION	
67-64-1	ACETONE	ND	30.
71-43-2	BENZENE	ND	5.
75-27-4	BROMODICHLOROMETHANE	ND	5.
75-25 -2	BROMOFORM	ND	5.
74-83-9	BROMOMETHANE	ND	30.
78-93-3	2-BUTANONE (MEK)	ND	30.
75-15-0	CARBON DISULFIDE	ND	5.
56-23-5	CARBON TETRACHLORIDE	ND	5.
108-90-7	CHLOROBENZENE	ND	5.
75-00-3	CHLOROETHANE	ND	30.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	50.
67-66-3	CHLOROFORM	ND	5.
74-87-3	CHLOROMETHANE	ND	30.
108-41-8	CHLOROTOLUENE	ND	5.
124-48-1	DIBROMOCHLOROMETHANE	ND	5.
95-50-1	1,2-DICHLOROBENZENE	ND	5.
541-73-1	1,3-DICHLOROBENZENE	ND	5.
106-46-7	1,4-DICHLOROBENZENE	ND	5.
75-34-3	1,1-DICHLOROETHANE	ND	5.
107-06-2	1,2-DICHLOROETHANE	ND	5.
75-35-4	1,1-DICHLOROETHYLENE	820.	5.
156-59-4	CIS-1,2-DICHLOROETHYLENE	7.	5.
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	5.
78-87-5	1,2-DICHLOROPROPANE	ND	5.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	5.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	5.
100-41-4	ETHYLBENZENE	ND	5.
106-93-4	ETHYLENE DIBROMIDE	ND	5.
76-13-1	FREON-TF	ND	5.
119-78-6	2-HEXANONE	ND	30.
75-09-2		ND	30.
108-10-1	(112511)	ND	30.
100-42-5	STYRENE	ND	5.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	5.
127-18-4	TETRACHLOROETHYLENE	ND	5.
109-99-9	TETRAHYDROFURAN	ND	30.
108-88-3	TOLUENE	ND	5.
71-55-6	1,1,1-TRICHLOROETHANE	130.	5.
79-00-5	1,1,2-TRICHLOROETHANE	ND	5.
79-01-6	TRICHLOROETHYLENE	430.	5.
75-69-4	TRICHLOROFLUOROMETHANE	ND	5.
108-05-4	VINYL ACETATE	ND	30.
75-01-4	VINYL CHLORIDE	ND	30.
95 - 47 - 6	TOTAL XYLENES	ND	5.

CLIENT: WOODWARD-CLYDE CONSULTANTS

WCAS JOB #: 13533

SAMPLE: WCC-8S-2A

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

CLIENT: WOODWARD-CLYDE CONSULTANTS

WCAS JOB #: 13533

SAMPLE: WCC-10S-2A

DATE RECEIVED: 08/24/89

RUN NUMBER: 13533V27 SAMPLE AMOUNT: 5ML

DATE EXTRACTED: 09/06/89 DATE ANALYZED: 09/06/89

MATRIX:

WATER

VOLATILE ORGANICS (EPA 624/8240)

UNITS: UG/L (PPB)

CAS #	COMPOUND	CONCENTRATION	DET LIMIT
67-64-1	ACETONE	ND	5.
71-43-2	BENZENE	ND	1.
75-27-4	BROMODICHLOROMETHANE	ND	1.
75-25-2	BROMOFORM	ND	1.
74-83-9	BROMOMETHANE	ND	5.
78-93-3	2-BUTANONE (MEK)	ND	5.
75-15-0	CARBON DISULFIDE	ND	1.
56-23-5	CARBON TETRACHLORIDE	ND	1.
108-90-7	CHLOROBENZENE	ND	1.
75-00-3	CHLOROETHANE	ND	5.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	10.
67-66-3	CHLOROFORM	4.	1.
74-87-3	CHLOROMETHANE	ND	5.
108-41-8	CHLOROTOLUENE	ND	1.
124-48-1	DIBROMOCHLOROMETHANE	ND	1.
95-50-1	1,2-DICHLOROBENZENE	ND	1.
541-73-1	1,3-DICHLOROBENZENE	ND	1.
106-46-7	1,4-DICHLOROBENZENE	ND	1.
75-34-3	1,1-DICHLOROETHANE	ND	i.
107-06-2	1,2-DICHLOROETHANE	ND	i.
75-35-4	1,1-DICHLOROETHYLENE	4.	i.
156-59-4	CIS-1,2-DICHLOROETHYLENE	ND	ī.
156-60-5	TRANS-1, 2-DICHLOROETHYLENE	ND	1.
78-87-5	1,2-DICHLOROPROPANE	ND	1.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	1.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	1.
100-41-4	ETHYLBENZENE	ND	1.
106-93-4	ETHYLENE DIBROMIDE	ND	1.
76-13-1	FREON-TF	ND	1.
119-78-6	2-HEXANONE	ND	5.
75-09-2	METHYLENE CHLORIDE	ND	5.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	5.
100-42-5	STYRENE	ND	1.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	1.
127-18-4	TETRACHLOROETHYLENE	ND	1.
109-99-9	TETRAHYDROFURAN	ND	5.
108-88-3	TOLUENE	ND	1.
71-55-6	1,1,1-TRICHLOROETHANE	ND	ī.
79-00-5	1,1,2-TRICHLOROETHANE	ND	ī.
79-01-6	TRICHLOROETHYLENE	81.	ī.
75-69-4	TRICHLOROFLUOROMETHANE	ND	1.
108-05-4	VINYL ACETATE	ND	5.
75-01-4	VINYL CHLORIDE	ND	5.
95-47-6	TOTAL XYLENES	ND	1.
· •		115	•••

CLIENT: WOODWARD-CLYDE CONSULTANTS

WCAS JOB #: 13533

SAMPLE: WCC-10S-2A

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

CLIENT: WOODWARD-CLYDE CONSULTANTS

WCAS JOB #: 13533

SAMPLE: WCC-10S-2R

DATE RECEIVED: 08/24/89 RUN NUMBER:

DATE EXTRACTED: 09/06/89 DATE ANALYZED: 09/06/89 RUN NUMBER: 13533V28
SAMPLE AMOUNT: 5ML
MATRIX: WATER

VOLATILE ORGANICS (EPA 624/8240) UNITS: UG/L (PPB)

CAS #	COMPOUND	CONCENTRATION	
67-64-1	ACETONE	ND	5.
71-43-2	BENZENE	ND	1.
75-27-4	BROMODICHLOROMETHANE	ND	1.
75-25-2	BROMOFORM	ND	1.
74-83-9	BROMOMETHANE	ND	5.
78-93-3	2-BUTANONE (MEK)	ND	5.
75-15-0	CARBON DISULFIDE	ND	1.
56-23-5	CARBON TETRACHLORIDE	ND	1.
108-90-7	CHLOROBENZENE	ND	1.
75-00-3	CHLOROETHANE	ND	5.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	10.
67-66-3	CHLOROFORM	ND	1.
74-87-3	CHLOROMETHANE	ND	5.
108-41-8	CHLOROTOLUENE	ND	1.
124-48-1	DIBROMOCHLOROMETHANE	ND	1.
95-50-1	1,2-DICHLOROBENZENE	ND	1.
541-73-1	1,3-DICHLOROBENZENE	ND	1.
106-46-7	1,4-DICHLOROBENZENE	ND	1.
75-34-3	1,1-DICHLOROETHANE	ND	1.
107-06-2	1,2-DICHLOROETHANE	ND	1.
75-35-4	1,1-DICHLOROETHYLENE	ND	1.
156-59-4	CIS-1,2-DICHLOROETHYLENE	ND	1.
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	1.
78-87-5	1,2-DICHLOROPROPANE	ND	1.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	1.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	1.
100-41-4	ETHYLBENZENE	ND	1.
106-93-4	ETHYLENE DIBROMIDE	ND	1.
76-13 - 1	FREON-TF	ND	1.
119-78-6	2-HEXANONE	ND	5.
75-09 - 2	METHYLENE CHLORIDE	ND	5.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	5.
100-42-5	STYRENE	ND	1.
79-34 - 5	1,1,2,2-TETRACHLOROETHANE	ND	1.
127-18-4	TETRACHLOROETHYLENE	ND	1.
109-99-9	TETRAHYDROFURAN	ND	5.
108-88-3	TOLUENE	ND	1.
71-55-6	1,1,1-TRICHLOROETHANE	ND	1.
79-00-5	1,1,2-TRICHLOROETHANE	ND	1.
79-01-6	TRICHLOROETHYLENE	ND	1.
75-69-4	TRICHLOROFLUOROMETHANE	ND	1.
108-05-4	VINYL ACETATE	ND	5.
75-01-4	VINYL CHLORIDE	ND	5.
95-47-6	TOTAL XYLENES	ND	1.

CLIENT: WOODWARD-CLYDE CONSULTANTS

WCAS JOB #: 13533

SAMPLE: WCC-10S-2R

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

Data Reporting Qualifiers

- Value If the result is a value greater than or equal to the Detection Limit (DL), the value is reported.
- ND Indicates that the compound was analyzed for but not detected. The minimum DL for the sample with the ND is reported based on necessary concentration or dilution actions.
- TR Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the specified DL but greater than zero.

Woodward-Clyde Consultants



CHAIN OF CUSTODY RECORD

SHIPMENT NO.:_____

PROJECT NAME:	Dougla-	A (raft	Co.	(06)
DDO IFOT NO	874.86	2 1 -70	 <+ 1	

Sample Number	Location	Type of	· · · · · · · · · · · · · · · · · · ·	Type of Cor	ntainer.		Type of Preservation		Analysi	is Required *
	7	Material	Method	4 0	me VOA	Temp	Ch	emical		
WCC-15-2A	WCC-15	377 €	BAINES	BRACIT	URE	ICE	1	KNE		
ince-15-23	V	WA O	,		V	1				
NCC-15-2C	<i>V</i>			4 02 3	2/455					
wcc-15-2R				40 AL	AW					
wcc-15-25				41						
(NCC-25-2A				1 7						
WCC-25-2B				4)						
WCC-25-2C				4 02	alass					
WCC-25-2R	T			40 MH	AW 0					
WCC-25-25				11						
WCC-35-2A	WCC-35			1,3						
WCC-35-2B				V }						
WCC-35-20	/			4 02.	this s	<i>.</i> "]				
wcc-3s-2R	/			40 MJ	ACU					
wcc-35-25										
WCC-95-2A	vwcc-4s			11						
WCC-45-2B				1 1						
wec 45-2c				4 22.	glass					
wcc-45-2R				40 Mg	VOA					
wcc-4s-2s	. 🗸	V	V	1 18 TO		N. Y	10	<u> </u>		
Total Number of S	Samples Shi	pped:	Sampler	's Signature:	1	100	Dear-			
Relinquished By:	12/04	Va.		Received E	By:	1	7406	,		Date
Signature	HOLE	L De u		_ Signature		0	SPIE	and .		7241
Printed Name	1 1et		SMAN	_ Printed I	Name	12	<u> </u>	cay_		Time
Company		حح		_ Company	/		P-1		···	5,111
Reason	And you	te deli	by to WC	[2 4
Relinquished By:	>	- 1		Received 6	By: h	Acres	Cide	und (Date
Signature	//			Signature		Jan	and	vacc.		8124139
Printed Name	Ken 1	2-1-1		Printed		' 	- ('ecle	y Jall		Time
Company	<i>/-</i> + - /			Company	Y]/	C/K-			11:067.0
Reason				_						
Relinquished By:				Received (By:					Date
Signature				Signatur	e					
Printed Name					Name					Time
Company			· · · · · ·	Compan	У					7 111.10
Reason						-				
Relinquished By:				Received						Date
Signature				_ Signatur	e					
Printed Name										Time
Company Reason				Compan	У				· · · · ·	

Special Shipment / Handling / Storage Requirements:

b13533

* Note - This does not constitute authorization to proceed with analysis

LA/OR-0183-421

RECEIVED

September 29, 1989

our e a foi i

WCC-SANTA ANA



WEST COAST ANALYTICAL SERVICE, INC.

ANALYTICAL CHEMISTS

Α

WOODWARD-CLYDE CONSULTANTS 203 N. Golden Circle Drive Santa Ana, CA 92705

Attn:

Dr. Alistaire Callender

JOB NO.

13764

LABORATORY REPORT

Samples Received: T

Thirteen (13) soils

Date Received: 9-25-89

Purchase Order No: Proj#: 8941863J-I/Douglas Aircraft

The samples were analyzed as follows:

Samples Analyzed

Analysis

Results

Three (3) soils

Volatile Organics

by EPA 8240

Data Sheets

Page 1 of 1

B. Michael Hovanec Senior Staff Chemist

D.J. Northington, Ph.D. Technical Director

CLIENT:

WOODWARD-CLYDE

RECEIVE PLE: 65-8-4

WCAS JOB #: 13764

OCT 0 4 (980

DATE RECEIVED: 09/25/89 DATE EXTRACTED: 09/29/89

WCC-SANTA ANARUN NUMBER: 13764 SAMPLE AMOUNT: 0.1G

13764V4

DATE ANALYZED:

09/29/89 MATRIX: SOIL

VOLATILE ORGANICS (EPA 624/8240)

UNITS: UG/KG (PPB)

"			
CAS #	COMPOUND	CONCENTRATION	DET LIMIT
======================================		=======================================	=========
	ACETONE	ND	300.
71-43-2	BENZENE	ND	50.
75-27-4	BROMODICHLOROMETHANE	ND	50.
75-25-2	BROMOFORM	ND	50.
74-83-9	BROMOMETHANE	ND	300.
78-93-3	2-BUTANONE (MEK)	9400.	300.
75-15-0	CARBON DISULFIDE	ND	50.
56-23-5	CARBON TETRACHLORIDE	ND	50.
108-90-7	CHLOROBENZENE	ND	50.
75-00-3	CHLOROETHANE	ND	300.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	500.
67-66-3	CHLOROFORM	ND	50.
74-87-3	CHLOROMETHANE	ND	300.
108-41-8	CHLOROTOLUENE	ND	50.
124-48-1	DIBROMOCHLOROMETHANE	ND	50.
95-50-1	1,2-DICHLOROBENZENE	ND	50.
541-73-1	1,3-DICHLOROBENZENE	ND	50.
106-46-7	1,4-DICHLOROBENZENE	ND	50.
75-34-3	1,1-DICHLOROETHANE	ND	50.
107-06-2	1,2-DICHLOROETHANE	ND	50.
75-35-4	1,1-DICHLOROETHYLENE	ND	50.
156-59-4	CIS-1,2-DICHLOROETHYLENE		
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	50.
78-87-5	1,2-DICHLOROPROPANE	ND	50.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	50.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	50.
100-41-4	ETHYLBENZENE	ND	50.
106-93-4		ND	50.
76-13-1	ETHYLENE DIBROMIDE	ND	50.
119-78-6	FREON-TF	ND	50.
	2-HEXANONE	ND	300.
75-09-2	METHYLENE CHLORIDE	ND	300.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	8400.	300.
100-42-5	STYRENE	ND	50.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	50.
127-18-4	TETRACHLOROETHYLENE	ND	50.
109-99-9	TETRAHYDROFURAN	ND	300.
108-88-3	TOLUENE	1000.	50.
71-55-6	1,1,1-TRICHLOROETHANE	ND	50.
79-00-5	1,1,2-TRICHLOROETHANE	ND	50.
79-01-6	TRICHLOROETHYLENE	ND	50.
75-69-4	TRICHLOROFLUOROMETHANE	ND	50.
108-05-4	VINYL ACETATE	ND	300.
75-01-4	VINYL CHLORIDE	ND	300.
95-47-6	TOTAL XYLENES	ND	50.
			50.

CLIENT:

WOODWARD-CLYDE

SAMPLE: 6S-8-4

WCAS JOB #: 13764

UNITS: UG/KG (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 BUTYL CELLOSOLVE

VOA

300.

CLIENT: WOODWARD-CLYDE

WCAS JOB #: 13764

SAMPLE: 6S-9-4

DATE RECEIVED: 09/25/89
DATE EXTRACTED: 09/29/89

DATE ANALYZED: 09/29/89

RUN NUMBER: 13764V2 SAMPLE AMOUNT: 0.1G

MATRIX: SOIL

VOLATILE ORGANICS (EPA 624/8240) UNITS: UG/KG (PPB)

CAS # COMPOUND CONCENTRATION DET LIMIT ______ 67-64-1 ACETONE 300. ND 71-43-2 BENZENE ND 50. 75-27-4 BROMODICHLOROMETHANE ND 50. 75-25-2 BROMOFORM ND 50. 74-83-9 **BROMOMETHANE** ND 300. 78-93-3 2-BUTANONE (MEK) 9200. 300. 75-15-0 CARBON DISULFIDE ND 50. 56-23-5 CARBON TETRACHLORIDE ND 50. 108-90-7 CHLOROBENZENE ND 50. 75-00-3 CHLOROETHANE ND 300. 2-CHLOROETHYLVINYL ETHER 110-75-8 ND 500. 67-66-3 CHLOROFORM ND 50. 74-87-3 CHLOROMETHANE ND 300. 108-41-8 CHLOROTOLUENE 50. ND 124-48-1 DIBROMOCHLOROMETHANE ND 50. 95-50-1 1,2-DICHLOROBENZENE ND 50. 541-73-1 1,3-DICHLOROBENZENE ND 50. 106-46-7 1,4-DICHLOROBENZENE ND 50. 75-34-3 1,1-DICHLOROETHANE ND 50. 107-06-2 1,2-DICHLOROETHANE ND 50. 75-35-4 1,1-DICHLOROETHYLENE 240. 50. 156-59-4 CIS-1, 2-DICHLOROETHYLENE ND 50. 156-60-5 TRANS-1,2-DICHLOROETHYLENE ND 50. 78-87-5 1,2-DICHLOROPROPANE ND 50. 10061-01-5 CIS-1,3-DICHLOROPROPENE ND 50. 10061-02-6 TRANS-1, 3-DICHLOROPROPENE ND 50. 100-41-4 **ETHYLBENZENE** ND 50. 106-93-4 ETHYLENE DIBROMIDE ND 50. 76-13-1 FREON-TF ND 50. 119-78-6 2-HEXANONE ND 300. 75-09-2 METHYLENE CHLORIDE ND 300. 108-10-1 4-METHYL-2-PENTANONE (MIBK) 2500. 300. 100-42-5 STYRENE ND 50. 79-34-5 1,1,2,2-TETRACHLOROETHANE ND 50. 127-18-4 TETRACHLOROETHYLENE ND 50. 109-99-9 **TETRAHYDROFURAN** ND 300. 108-88-3 TOLUENE 2200. 50. 71-55-6 1,1,1-TRICHLOROETHANE ND 50. 79-00-5 1,1,2-TRICHLOROETHANE ND 50. 79-01-6 83. TRICHLOROETHYLENE 50. 75-69-4 TRICHLOROFLUOROMETHANE ND 50. 108-05-4 VINYL ACETATE ND 300. 75-01-4 VINYL CHLORIDE ND 300. 95-47-6 TOTAL XYLENES ND 50.

CLIENT:

WOODWARD-CLYDE

SAMPLE: 6S-9-4

WCAS JOB #: 13764

UNITS: UG/KG (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 BUTYL CELLOSOLVE

VOA

700.

CLIENT: WOODWARD-CLYDE

WCAS JOB #: 13764

SAMPLE: 6S-10-4

DATE RECEIVED: 09/25/89 DATE EXTRACTED: 09/29/89

DATE ANALYZED: 09/29/89

RUN NUMBER: 13764V1 SAMPLE AMOUNT: 1.0G MATRIX: SOIL

VOLATILE ORGANICS (EPA 624/8240)

UNITS: UG/KG (PPB)

	(==== =================================	UNITS: UG/K	G (PPB)
CAS #	COMPOUND	CONCENTRATION	DET LIMIT
67-64-1	ACETONE	======================================	30.
71-43-2	BENZENE	ND	5.
75-27-4	BROMODICHLOROMETHANE	ND	
75-25-2	BROMOFORM	ND	5.
74-83-9	BROMOMETHANE	ND	5.
78-93-3	2-BUTANONE (MEK)	550.	30.
75-15-0	CARBON DISULFIDE		30.
56-23-5	CARBON TETRACHLORIDE	ND	5.
108-90-7	CHLOROBENZENE	ND	5.
75-00-3	CHLOROETHANE	ND	5.
110-75-8	2-CHLOROETHYLVINYL ETHER	ИD	30.
67-66-3	CHLOROFORM	ND	50.
74-87-3	CHLOROMETHANE	ND	5.
108-41-8	CHLOROTOLUENE	ND	30.
124-48-1	DIBROMOCHLOROMETHANE	ND	5.
95-50-1	1,2-DICHLOROBENZENE	ND	5.
541-73-1	1,3-DICHLOROBENZENE	ND	5.
106-46-7	1,4-DICHLOROBENZENE	ND	5.
75-34-3	1,1-DICHLOROETHANE	ND	5.
107-06-2	1,2-DICHLOROETHANE	ND	5.
75-35-4	1,1-DICHLOROETHYLENE	ND	5.
156-59-4	CIS-1,2-DICHLOROETHYLENE	ND	5.
156-60-5	TRANS-1, 2-DICHLOROETHYLENE	ND	5.
78-87-5	1,2-DICHLOROPROPANE	ND	5.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	5.
10061-02-6	TRANS-1, 3-DICHLOROPROPENE	ND	5.
100-41-4	ETHYLBENZENE	ND	5.
106-93-4	ETHYLENE DIBROMIDE	ND	5.
76-13-1	FREON-TF	ND	5.
119-78-6	2-HEXANONE	ND	5.
75-09-2	METHYLENE CHLORIDE	ND	30.
108-10-1		ND	30.
100-42-5	4-METHYL-2-PENTANONE (MIBK) STYRENE	330.	30.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	5.
127-18-4	TETRACHLOROETHYLENE	ND	5.
109-99-9	TETRAHYDROFURAN	ND	5.
108-88-3	TOLUENE	ND	30.
71-55-6	1,1,1-TRICHLOROETHANE	150.	5.
79-00-5	1,1,2-TRICHLOROETHANE	ND	5.
79-01-6	TRICHLOROETHYLENE	ND	5.
75-69-4	TRICHLOROFLUOROMETHANE	7.	5.
108-05-4	VINYL ACETATE	ND	5.
75-01-4	VINIL ACETATE VINYL CHLORIDE	ND	30.
95-47-6		ND	30.
4/- 0	TOTAL XYLENES	ND	5.

CLIENT:

WOODWARD-CLYDE

WCAS JOB #: 13764

SAMPLE: 6S-10-4

UNITS: UG/KG (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

Data Reporting Qualifiers

- Value If the result is a value greater than or equal to the Detection Limit (DL), the value is reported.
- ND Indicates that the compound was analyzed for but not detected. The minimum DL for the sample with the ND is reported based on necessary concentration or dilution actions.
- Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the specified DL but greater than zero.

RECEIVED **Woodward-Clyde Consultants** SHIPMENT NO .: _ OCT a 4 G CHAIN OF CUSTODY RECORD PAGE___ WCC-SANTA ANA DATE 2 PROJECT NAME: DOUGLAS A. RCRAFT CO PROJECT NO.: \$94. 963 Type of Sample Type of Preservation Analysis Required* Sample Number Location Type of Container Method Chemical Material Temp 1111-153 500 106 NUME 7" 55-55 TUBE 14 Li 324 ----FDA 8240 i - in _U 1. . --11-4 Total Number of Samples Shipped: 13 Sampler's Signature: (12) 7-7 K. Garage Date Received By: Relinquished By: Signature_ Signature ______ Printed Name Printed Name_ Time Company_ Company_ Reason_ Date Received By:: Relinquished By: Signature_ Signature_ Printed Name Printed Name Time Company_ Company__ Reason_ Date Relinquished By: Received By: Signature_ Signature_ Printed Name/1 Printed Name_ Time Company_ Company__ Reason_ Date Received By: Relinquished By: Signature_ Signature_

Printed Name_

Company_

Special Shipment / Handling / Storage Requirements:

Printed Name_

Company_ Reason _

1

w 1376A

* Note - This does not constitute authorization to proceed with analysis

LA/OR-0183-421

Time

October 18, 1989

RECEIVED

WOODWARD-CLYDE CONSULTANTS 203 N. Golden Circle Dr. Santa Ana, CA 92705 OCT 1 9 1983 WCC-SANTA ANA



Attn:

Dr. Alistaire Callender

JOB NO.

13882

LABORATORY REPORT

Samples Received: Three (3) liquids in quadruplicate

Date Received: 10-9-89

Date Released for Analysis: 10-11-89

Purchase Order No: Proj#: 8941863J/Douglas Aircraft

The samples were analyzed as follows:

Samples Analyzed

<u>Analysis</u>

Results

Three (3) liquids

Volatile Organics

by EPA 624

Data Sheets

Page 1 of 1

for

Michael Shelton Senior Chemist

J. Northington, Ph.D.
Technical Director

CLIENT: WOODWARD-CLYDE CONSULTANTS SAMPLE: WCC-6S-1A

WCAS JOB #: 13882

DATE RECEIVED: 10/09/89 RUN NUMBER: 13882V5 DATE EXTRACTED: 10/17/89 SAMPLE AMOUNT: 5ML DATE ANALYZED: 10/17/89 MATRIX: WATER

VOLATILE ORGANICS (EPA 624/8240) UNITS: UG/L (PPB)

CASE COMPOUND CONCENTRATION DET LIMIT			ONIIS. OG/L (PPB)					
71-43-2 BENZENE ND 5. 75-27-4 BROMODICHLOROMETHANE ND 1. 75-27-4 BROMOFORM ND 1. 74-83-9 BROMOMETHANE ND 5. 78-93-3 2-BUTANONE (MEK) ND 5. 75-15-0 CARBON DISULFIDE ND 1. 75-15-0 CARBON DISULFIDE ND 1. 75-00-3 CHLOROBENZENE ND 1. 75-00-3 CHLOROETHANE ND 5. 77-00-3 CHLOROFORM ND 1. 75-00-3 CHLOROFORM ND 1. 75-00-3 CHLOROFORM ND 1. 75-00-3 CHLOROFORM ND 1. 75-15-0 CARBON DISULFIDE ND 1. 75-15-0 CARBON DISULFIDE ND 1. 75-15-0 CARBON DISULFIDE ND 1. 75-15-0 CARBON DISULFIDE ND 1. 75-15-0 CARBON DISULFIDE ND 1. 75-16-3 CHLOROFORM ND 1. 75-16-3 CHLOROFORM ND 1. 75-16-3 CHLOROFORM ND 1. 75-18-3 CHLOROFORM ND 1. 75-18-3 CHLOROFORM ND 1. 75-18-4 DIBROMOCHLOROMETHANE ND 1. 75-34-3 1,1-DICHLOROBENZENE ND 1. 75-35-4 1,1-DICHLOROBENZENE ND 1. 75-35-4 1,1-DICHLOROETHANE 2. 1,1-DICHLOROFTHANE 3. 1. 156-60-5 TRANS-1,2-DICHLOROETHYLENE 2. 156-60-5 TRANS-1,2-DICHLOROETHYLENE 7. 156-60-5 TRANS-1,2-DICHLOROFORPOPENE ND 1. 100-41-4 ETHYLENG DIBROMIDE ND 1. 100-41-4 ETHYLENG DIBROMIDE ND 1. 100-41-4 ETHYLENG DIBROMIDE ND 1. 100-41-4 ETHYLENG DIBROMIDE ND 1. 100-41-4 ETHYLENG DIBROMIDE ND 1. 109-99-9 TETRAHYDROFURAN ND 5. 100-42-5 STYRENE ND 1. 109-99-9 TETRAHYDROFURAN ND 5. 100-88-3 TOLUENE ND 1. 109-99-9 TETRAHYDROFURAN ND 1. 109-99-9 TETRAHYDROFURAN ND 1. 109-99-9 TETRAHYDROFURAN ND 1. 109-99-9 TETRAHYDROFURAN ND 1. 109-90-5 1,1,2-TICHLOROETHANE ND 1. 109-90-6 TIRLOFOFTHANE ND 1. 109-90-7 TETRAHYDROFURAN ND 5. 100-10-6 TRICHLOROETHYLENE ND 1. 100-61-6 TRICHLOROETHYLENE ND 1. 100-61-6 TRICHLOROETHYLENE ND 1. 100-61-6 TRICHLOROETHYLENE ND 1. 100-61-6 TRICHLOROETHYLENE ND 1. 100-61-6 TRICHLOROETHYLENE ND 1. 100-61-6 TRICHLOROETHYLENE ND 1. 100-61-6 TRICHLOROETHYLENE ND 1. 100-61-6 TRICHLOROETHYLENE ND 1. 100-61-6 TRICHLOROETHYLENE ND 1. 100-61-6 TRICHLOROETHYLENE ND 1. 100-61-6 TRICHLOROETHYLENE ND 1. 100-61-6 TRICHLOROETHYLENE ND 1. 100-61-6 TRICHLOROETHYLENE ND 1. 100-61-6 TRICHLOROETHYLENE ND 1. 100-61-6 TRICHLOROETHYLENE ND 1. 100-61-6 TRICHLOROETHYLENE ND 1. 100-61-6 TRICHLOROETHYLENE ND 1. 100-61-6 TRICHLOROETHYLENE ND 1. 100-61	CAS #		CONCENTRATION	DET LIMIT				
71-43-2 BENZENE ND 1. 75-27-4 BROMODICHLOROMETHANE ND 1. 75-25-2 BROMOFORM ND 1. 75-25-2 BROMOFORM ND 1. 78-93-3 2-BUTANONE (MEK) ND 5. 75-15-0 CARBON DISULFIDE ND 1. 108-90-7 CHLOROGENAENE ND 1. 108-90-7 CHLOROGENAENE ND 1. 75-00-3 CHLOROGENAENE ND 1. 75-00-3 CHLOROGENAENE ND 1. 75-00-3 CHLOROGENAENE ND 1. 75-00-3 CHLOROGENAENE ND 1. 75-00-3 CHLOROGENAENE ND 1. 75-00-3 CHLOROGENAENE ND 1. 75-00-3 CHLOROGENAENE ND 1. 75-00-3 CHLOROGENAENE ND 1. 75-00-3 CHLOROGENAENE ND 1. 75-00-3 CHLOROGENAENE ND 1. 75-00-3 CHLOROGENAENE ND 1. 75-00-1 1,2-DICHLOROMETHANE ND 1. 75-01 1,2-DICHLOROGENZENE ND 1. 75-04-48-1 DIBROMOCHLOROMETHANE ND 1. 75-04-43 1,1-DICHLOROBENZENE ND 1. 75-34-3 1,1-DICHLOROSENZENE ND 1. 75-34-3 1,1-DICHLOROSENAENE ND 1. 75-35-4 1,1-DICHLOROSENAENE ND 1. 75-35-4 1,1-DICHLOROSENAENE ND 1. 75-35-4 1,1-DICHLOROSENAENE ND 1. 75-35-4 1,1-DICHLOROSENAENE ND 1. 75-38-7 1,2-DICHLOROSENAENE ND 1. 75-66-59-4 CIS-1,2-DICHLOROSENAENE ND 1. 75-88-7 1,2-DICHLOROSENAENE ND 1. 75-88-7 1,2-DICHLOROSENAENE ND 1. 75-60-1 TRANS-1,2-DICHLOROSENAENE ND 1. 70061-01-5 CIS-1,3-DICHLOROSPOPENE ND 1. 70061-02-6 TRANS-1,3-DICHLOROSPOPENE ND 1. 70061-02-6 TRANS-1,3-DICHLOROSPOPENE ND 1. 75-09-2 METHYLENE DIBROMIDE ND 1. 75-09-2 METHYLENE DIBROMIDE ND 5. 75-09-2 METHYLENE CHLORIDE ND 5. 75-09-2 METHYLENE CHLORIDE ND 5. 75-09-2 METHYLENE CHLORIDE ND 5. 75-09-2 METHYLENE CHLORIDE ND 5. 75-09-2 METHYLENE CHLORIDE ND 5. 75-09-2 METHYLENE CHLORIDE ND 5. 709-01-6 TRICHLOROSTHYLENE ND 1. 71-55-6 1,1,2-TRICHLOROSTHANE ND 1. 71-55-6 1,1,1-TRICHLOROSTHANE ND 1. 71-55-6 TRICHLOROSTHYLENE ND 1. 71-55-6 TRICHLOROSTHYLENE ND 1. 71-55-6 TRICHLOROSTHYLENE ND 1. 71-55-6 TRICHLOROSTHYLENE ND 1. 71-55-6 TRICHLOROSTHYLENE ND 1. 71-55-6 TRICHLOROSTHYLENE ND 1. 71-55-6 TRICHLOROSTHYLENE ND 1. 71-55-6 TRICHLOROSTHYLENE ND 1. 71-55-6 TRICHLOROSTHYLENE ND 1. 71-55-6 TRICHLOROSTHY	67-64-1	ACETONE						
75-27-4 BROMODICHLOROMETHANE ND 1.	71-43-2							
75-25-25 BROMOFORM ND 1. 74-83-9 BROMOMETHANE ND 5. 78-93-3 2-BUTANONE (MEK) ND 5. 75-15-0 CARBON DISULFIDE ND 1. 108-90-7 CHLOROBENZENE ND 1. 110-75-8 2-CHLOROETHYLVINYL ETHER ND 5. 110-75-8 2-CHLOROETHYLVINYL ETHER ND 10. 67-66-3 CHLOROFORM ND 1. 124-48-1 DIBROMOCHLOROMETHANE ND 1. 124-48-1 DIBROMOCHLOROMETHANE ND 1. 106-46-7 1,4-DICHLOROBENZENE ND 1. 107-06-2 1,2-DICHLOROETHANE ND 1. 107-06-2 1,2-DICHLOROETHANE ND 1. 107-06-2 1,2-DICHLOROETHANE ND 1. 107-06-2 1,2-DICHLOROETHANE ND 1. 107-06-2 1,2-DICHLOROETHANE ND 1. 107-06-2 1,2-DICHLOROETHANE ND 1. 156-59-4 CIS-1,2-DICHLOROETHYLENE 12. 156-60-5 TRANS-1,2-DICHLOROETHYLENE 12. 156-60-5 TRANS-1,3-DICHLOROFORDENE ND 1. 10061-01-5 CIS-1,3-DICHLOROFORDENE ND 1. 10061-02-6 TRANS-1,3-DICHLOROFORDENE ND 1. 10061-02-6 TRANS-1,3-DICHLOROFORDENE ND 1. 10061-03-4 ETHYLENE DIBROMIDE ND 1. 100-41-4 ETHYLENE DIBROMIDE ND 1. 109-99-2 METHYLENE CHLORIDE ND 5. 109-94-5 STYRENE ND 1. 119-78-6 2-HEXANONE ND 5. 100-42-5 STYRENE ND 1. 109-99-9 TERAHYDROFUNAN ND 5. 109-99-9 TETRAHYDROFUNAN ND 5. 109-90-5 1,1,2-TICHLOROETHANE ND 1. 109-90-1 TETRAHYDROFUNAN ND 5. 109-90	75-27-4							
74-83-9 BROMOMETHANE		BROMOFORM						
78-93-3 2-BUTANONE (MEK)								
T5=15-0								
1		CARRON DIGHTETE						
108-90-7								
T5-00-3		CHIODORENZENE						
110-75-8 2-CHLOROETHYLVINYL ETHER								
10				5.				
T4-87-3		CHIOROETHYLVINYL ETHER	ND	10.				
108-41-8			ND	1.				
124-48-1 DIBROMOCHLOROMETHANE ND 1. 95-50-1 1,2-DICHLOROBENZENE ND 1. 541-73-1 1,3-DICHLOROBENZENE ND 1. 106-46-7 1,4-DICHLOROBENZENE ND 1. 107-06-2 1,2-DICHLOROETHANE 4. 1. 107-06-2 1,2-DICHLOROETHANE 3. 1. 75-35-4 1,1-DICHLOROETHYLENE 3. 1. 156-69-4 CIS-1,2-DICHLOROETHYLENE 7. 1. 156-60-5 TRANS-1,2-DICHLOROETHYLENE 7. 1. 10061-01-5 CIS-1,3-DICHLOROPROPENE ND 1. 10061-02-6 TRANS-1,3-DICHLOROPROPENE ND 1. 100-41-4 ETHYLENE DIBROMIDE ND 1. 106-93-4 ETHYLENE DIBROMIDE ND 1. 119-78-6 2-HEXANONE ND 1. 119-78-6 2-HEXANONE ND 5. 108-10-1 4-METHYL-2-PENTANONE (MIBK) ND 5. 109-34-5 1,1,2,2-TETRACHLOROETHANE ND 1. 127-18-4 TETRACHLOROETHYLENE ND 1. 109-99-9 TETRAHYDROFURAN ND 5. 109-99-9 TETRAHYDROFURAN ND 5. 109-99-9 TETRAHYDROFURAN ND 5. 109-99-9 TETRAHYDROFURAN ND 5. 109-99-9 TETRAHYDROFURAN ND 5. 109-99-9 TETRAHYDROFURAN ND 5. 109-99-9 TETRAHYDROFURAN ND 5. 109-99-9 TETRAHYDROFURAN ND 5. 109-99-9 TETRAHYDROFURAN ND 5. 109-99-9 TETRAHYDROFURAN ND 5. 109-99-9 TETRAHYDROFURAN ND 5. 109-99-9 TETRAHYDROFURAN ND 5. 109-99-9 TETRAHYDROFURAN ND 5. 109-00-5 1,1,2-TRICHLOROETHANE 4. 1. 179-00-6 TRICHLOROETHYLENE ND 1. 108-05-4 VINYL ACETATE ND 5. 108-05-4 VINYL ACETATE ND 5. 108-05-4 VINYL CHLORIDE ND 5.			ND	5.				
95-50-1 1,2-DICHLOROBENZENE ND 1. 541-73-1 1,3-DICHLOROBENZENE ND 1. 106-46-7 1,4-DICHLOROBENZENE ND 1. 75-34-3 1,1-DICHLOROETHANE 4. 1. 107-06-2 1,2-DICHLOROETHANE 3. 1. 75-35-4 1,1-DICHLOROETHYLENE 210. 1. 156-59-4 CIS-1,2-DICHLOROETHYLENE 12. 1. 156-60-5 TRANS-1,2-DICHLOROETHYLENE 7. 1. 78-87-5 1,2-DICHLOROETHYLENE ND 1. 10061-01-5 CIS-1,3-DICHLOROPROPENE ND 1. 10061-02-6 TRANS-1,3-DICHLOROPROPENE ND 1. 100-41-4 ETHYLENE DIBROMIDE ND 1. 100-41-4 ETHYLENE DIBROMIDE ND 1. 119-78-6 2-HEXANONE ND 1. 119-78-6 2-HEXANONE ND 5. 108-10-1 4-METHYL-2-PENTANONE (MIBK) ND 5. 108-10-1 4-METHYL-2-PENTANONE (MIBK) ND 5. 109-99-9 TETRAHYDROFURAN ND 1. 109-99-9 TETRAHYDROFURAN ND 5. 108-88-3 TOLUENE ND 1. 1-55-6 1,1,1-TRICHLOROETHANE ND 1. 1-55-69-4 TRICHLOROETHYLENE ND 1. 1-55-69-4 TRICHLOROETHYLENE ND 1. 1-55-69-4 TRICHLOROETHANE ND 1. 1-55-69-4 TRICHLOROETHANE ND 5. 1-55-69-4 TRICHLOROETHANE ND 1. 1-55-69-4 TRICHLOROETHANE ND 5. 1-55-69-4 TRICHLOROETHANE ND 1. 1-55-69-4 TRICHLOROETHANE ND 1. 1-55-69-4 TRICHLOROETHANE ND 1. 1-55-69-4 TRICHLOROETHANE ND 1. 1-55-69-4 TRICHLOROETHANE ND 1. 1-55-60-1-4 VINYL ACETATE ND 5. 1-55-60-1-4 VINYL CHLORIDE ND 5. 1-55-60-1-4 VINYL CHLORIDE ND 5. 1-55-60-1-4 VINYL CHLORIDE ND 5. 1-55-60-1-4 VINYL CHLORIDE ND 5. 1-55-60-1-4 VINYL CHLORIDE ND 5. 1-55-60-1-4 VINYL CHLORIDE ND 5. 1-55-60-1-4 VINYL CHLORIDE ND 5. 1-55-60-1-4 VINYL CHLORIDE ND 5. 1-55-60-1-4 VINYL CHLORIDE ND 5.			ND	1.				
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156-60-5		1,1-DICHLOROETHYLENE						
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100-42-5 STYRENE		4-METHYL-2-PENTANONE (MTRK)						
79-34-5	100-42-5	STYRENE						
127-18-4 TETRACHLOROETHYLENE 109-99-9 TETRAHYDROFURAN 108-88-3 TOLUENE 71-55-6 1,1,1-TRICHLOROETHANE 79-00-5 1,1,2-TRICHLOROETHANE 79-01-6 TRICHLOROETHYLENE 75-69-4 TRICHLOROFLUOROMETHANE 108-05-4 VINYL ACETATE 75-01-4 VINYL CHLORIDE 95-47-6 TOTAL YVIENES 1. ND 1. ND 5. ND 5. ND 5. ND 5. ND 5. ND 5. ND 5. ND 5. ND	79-34-5							
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108-05-4 VINYL ACETATE ND 5. 75-01-4 VINYL CHLORIDE ND 5. 95-47-6 TOTAL YVIENES								
75-01-4 VINYL CHLORIDE ND 5. 95-47-6 TOTAL YVIENES ND 5.		VINVI ACEMANE						
95-47-6 TOTAL VI PNPS 5.				5.				
ND 1.			ND	5.				
		TOTAT VALENES	ND	1.				

CLIENT:

WOODWARD-CLYDE CONSULTANTS

SAMPLE: WCC-6S-1A

WCAS JOB #: 13882

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

CLIENT: WOODWARD-CLYDE CONSULTANTS SAMPLE: WCC-9S-1A

WCAS JOB #: 13882

DATE RECEIVED: 10/09/89 RUN NUMBER: 13882V7 DATE EXTRACTED: 10/17/89 SAMPLE AMOUNT: 5ML DATE ANALYZED: 10/17/89 MATRIX: WATER

VOLATILE ORGANICS (EPA 624/8240) UNITS: UG/L (PPB)

		ONIIS. OG/L (PPB)				
CAS # ========	COMPOUND	CONCENTRATION	DET LIMIT			
67-64-1	ACETONE					
71-43-2	BENZENE	ND	5.			
75-27-4	BROMODICHLOROMETHANE	ND	1.			
75-25-2	BROMOFORM	ND	1.			
74-83-9	BROMOMETHANE	ND	1.			
78-93-3	2-BUTANONE (MEK)	ND	5.			
75-15-0	CARBON DISULFIDE	ND	5.			
56-23-5	CARBON TETRACHLORIDE	ND	1.			
108-90-7	CHLOROBENZENE	ND	1.			
75-00-3	CHLOROETHANE	ND	1.			
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	5.			
67-66-3	CHLOROFORM	ND	10.			
74-87-3	CHLOROMETHANE	ND	1.			
108-41-8	CHLOROTOLUENE	ND	5.			
124-48-1	DIBROMOCHLOROMETHANE	ND	1.			
95-50-1	1,2-DICHLOROBENZENE	ND	1.			
541-73-1	1,3-DICHLOROBENZENE	ND	1.			
106-46-7	1 A-DICHIOROBENZENE	ND	1.			
75-34-3	1,4-DICHLOROBENZENE 1,1-DICHLOROETHANE	ND	1.			
107-06-2	1,1-DICHLOROETHANE	ND	1.			
75-35-4	1,2-DICHLOROETHANE	ND	1.			
156-59-4	1,1-DICHLOROETHYLENE	ND	1.			
156-60-5	CIS-1,2-DICHLOROETHYLENE	7.	1.			
78-87-5	TRANS-1,2-DICHLOROETHYLENE	ND	1.			
10061-01-5	1,2-DICHLOROPROPANE	ND	1.			
10061-02-6	CIS-1,3-DICHLOROPROPENE	ND	1.			
100-41-4	TRANS-1,3-DICHLOROPROPENE	ND	1.			
106-93-4	ETHYLBENZENE	ND	1.			
76-13-1	ETHYLENE DIBROMIDE	ND	1.			
119-78-6	FREON-TF	2.	1.			
75-09-2	2-HEXANONE	ND	5.			
108-10-1	METHYLENE CHLORIDE	ND	5.			
100-42-5	4-METHYL-2-PENTANONE (MIBK)	ND	5.			
79-34-5	STYRENE	ND	1.			
127-18-4	1,1,2,2-TETRACHLOROETHANE	ND	1.			
109-99-9	TETRACHLOROETHYLENE	ND	1.			
109-99-9	TETRAHYDROFURAN	ND	5.			
71-55-6	TOLUENE	ND	1.			
79-00-5	1,1,1-TRICHLOROETHANE	ND	1.			
	1,1,2-TRICHLOROETHANE	ND	1.			
79-01-6	TRICHLOROETHYLENE	15.	1.			
75-69-4	TRICHLOROFLUOROMETHANE	ND	1.			
108-05-4	VINYL ACETATE	ND	5.			
75-01-4	VINYL CHLORIDE	ND	5.			
95-47-6	TOTAL XYLENES	ND	1.			

CLIENT:

WOODWARD-CLYDE CONSULTANTS SAMPLE: WCC-9S-1A

WCAS JOB #: 13882

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

NONE FOUND

CLIENT: WOODWARD-CLYDE CONSULTANTS SAMPLE: WCC-12S-1A

WCAS JOB #: 13882

DATE RECEIVED: 10/09/89 RUN NUMBER: 13882V8
DATE EXTRACTED: 10/17/89 SAMPLE AMOUNT: 5ML
DATE ANALYZED: 10/17/89 MATRIX: WATER

VOLATILE ORGANICS (EPA 624/8240) UNITS: UG/L (PPB)

CAS #	COMPOUND	CONCENTRATION	DET LIMIT
67-64-1	ACETONE	ND	5.
71-43-2	BENZENE	ND	1.
75-27-4	BROMODICHLOROMETHANE	ND	1.
75-25-2	BROMOFORM	ND	1.
74-83-9	BROMOMETHANE	ND	5.
78-93-3	2-BUTANONE (MEK)	ND	5.
75-15-0	CARBON DISULFIDE	ND	1.
56-23-5	CARBON TETRACHLORIDE	ND	1.
108-90-7	CHLOROBENZENE	ND	1.
75-00-3	CHLOROETHANE	ND	5.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	10.
67-66-3	CHLOROFORM	ND	1.
74-87-3	CHLOROMETHANE	ND	5.
108-41-8	CHLOROTOLUENE	ND	1.
124-48-1	DIBROMOCHLOROMETHANE	ND	1.
95-50-1	1,2-DICHLOROBENZENE	ND	1.
541-73-1	1,3-DICHLOROBENZENE	ND	1.
106-46-7	1,4-DICHLOROBENZENE	ND	1.
75-34-3	1,1-DICHLOROETHANE	ND	1.
107-06-2	1,2-DICHLOROETHANE	ND	1.
75-35-4	1,1-DICHLOROETHYLENE	ND	1.
156-59-4	CIS-1,2-DICHLOROETHYLENE	ND	1.
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	1.
78-87-5	1,2-DICHLOROPROPANE	ND	1.
10061-01-5		ND	1.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	1.
100-41-4	ETHYLBENZENE	ND	1.
106-93-4	ETHYLENE DIBROMIDE	ND	1.
76-13-1	FREON-TF	4.	1.
119-78-6	2-HEXANONE	ND	5.
75-09-2	METHYLENE CHLORIDE	ND	5.
	4-METHYL-2-PENTANONE (MIBK)	ND	5.
	STYRENE	ND	1.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	1.
127-18-4	TETRACHLOROETHYLENE	ND	1.
109-99-9	TETRAHYDROFURAN	ND	5.
108-88-3	TOLUENE	ND	1.
71-55-6	1,1,1-TRICHLOROETHANE	ND	1.
79-00-5	1,1,2-TRICHLOROETHANE	ND	1.
79-00-5	TRICHLOROETHYLENE	ND	1.
75-69-4	TRICHLOROFLUOROMETHANE	ND	1.
108-05-4	VINYL ACETATE	ND	5.
75-01-4	VINIL ACEIRIE VINYL CHLORIDE	ND	5.
95-47-6	TOTAL XYLENES	ND	1.
75-4/-b	IOIMP VITENES		

CLIENT:

WOODWARD-CLYDE CONSULTANTS SAMPLE: WCC-12S-1A

WCAS JOB #: 13882

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

Data Reporting Qualifiers

- Value If the result is a value greater than or equal to the Detection Limit (DL), the value is reported.
- ND Indicates that the compound was analyzed for but not detected. The minimum DL for the sample with the ND is reported based on necessary concentration or dilution actions.
- TR Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the specified DL but greater than zero.

Woodward-Clyde Consultants



CHAIN OF CUSTODY RECORD

SHIPMENT NO .:

PAGE 2 OF 3 DATE 8 1231 89

PROJECT NAME: Duglas Aircraft Co. (CG)

8941863 J- TASK 1

PROJECT_NO.:_ Type of Preservation Analysis Required* Type of Sample Type of Container Location Sample Number Temp Chemical Method Material 40mily NONE 100 WCC-55-2A WCC-55 AL WATER PAILER INICC -55-2B WCC-55-2C WCC-55-2R WCC-55-25 WCC-75-2A/VVCC-75 WCC-75-26 Blass wcc-7<-2c WCC-75 -2R WCC-75-25 WCC-XS-2AMKC-8S WCC-85-28V wcc-85-20 PASS WCC-85-28 WCC-85-25 WCC-105-2AVWC-105 Wcc- 105-26 WCC - 65-20 WCC-105-2R WCC - 105 -2\$ Sampler's Signature: Total Number of Samples Shipped: Date Received By: Relinquished By: 12-18 Signature_ Signature_ PETPT GKESMAN Printed Name Time Printed Name_ Company_ Company_ WC 25 Reason_ Received By: Man (10 Date 8124 189 Relinquished By: Signature_ Signature_ Printed Name. Printed Name_ Time Company_ 1:00 4 7. Company_ Reason_ Date Received By: Relinguished By: Signature, Signature_ Printed Name_ Time Printed Name_ Company_ Company___ Reason_ Date Received By: Relinquished By: Signature_ Signature. Printed Name_ Time Printed Name. Company_ Company_ Reason. Special Shipment / Handling / Storage Requirements:

h 13533

* Note - This does not constitute authorization to proceed with analysis

LA/OR-0183-421

		Woo	dward-	Clyde Consulta	ants (SHIPM	ENT NO.:
		C	HAIN OF	CUSTODY RECO	RD	PAGE_	3 of 3
	PROJEC	CT NAME:	Dougla	s Aircraft	Co.	(C6) DATE	8 123189
	PROJEC	CT NO.:	R94186	3.1 - TASK	1	·	
Sample Number	Location	Type of	Sample Method	Type of Container		of Preservation	Analysis Required *
WCC-10-24	VINCE-In	Material		40 Ml VOA	Temp	Chemical MME	
WCL-17-28		MICA	1	TO ME VOA	1	NAME	
wcc-10-2c	/			4 oz. glass			;
WCC-112-2R				40 Ml VOA			
wcc-10-25	,						
MCC-3D-2B							
WCC-30-20				4 oz. glass			
wcc-30-2R				40 MR VOA			
WCC-3D-25	v V	V	<u> </u>	<u> </u>	V	V	
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* Note — This doe	s not cons	titute autho	rization to	proceed with analysis	5		
							LA/OR-0183-421

Woodward-Clyde Consultants



CHAIN OF CUSTODY RECORD

SHIPMENT	NO.:_	
PAGE_/	_OF_	

PROJECT NAME:_	Ducalas	Aircel+	(0.
PROJECT NO.:		41863)	

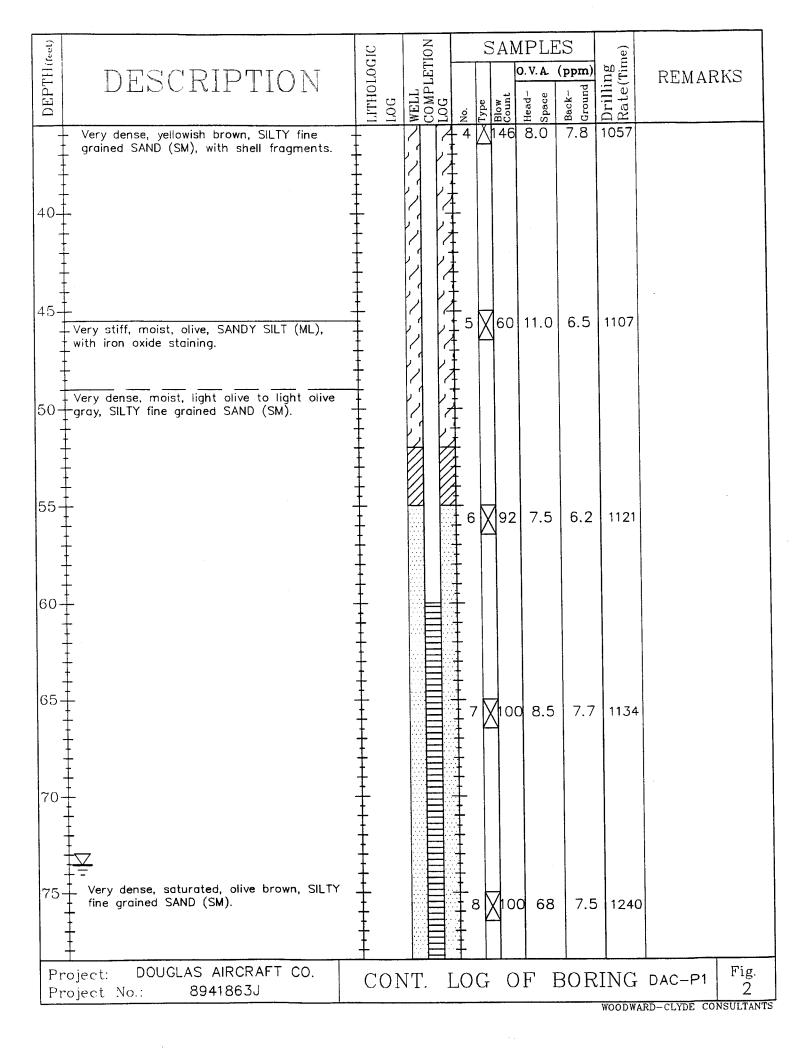
PROJECT NO.:_____

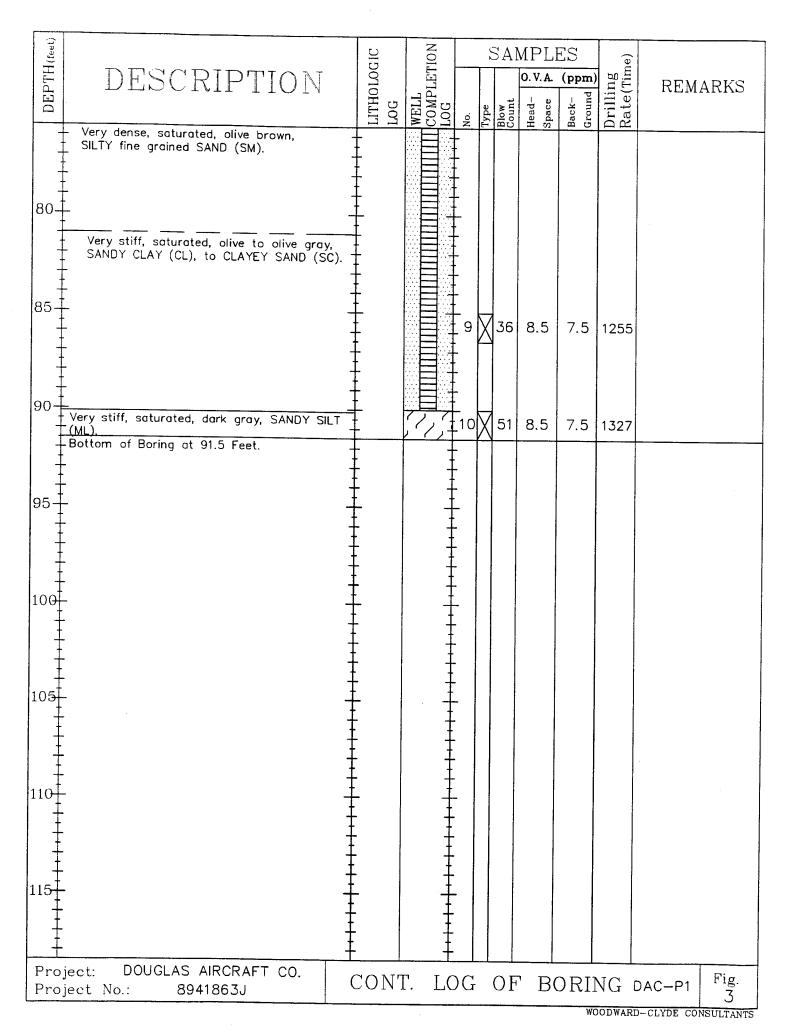
DATE 10 16189

Sample Number	Location	Type of Sample Type of Container Type of Preservation		of Preservation	Analysis Required *		
Campie (4dinber Location		Material	Method	Type of Container	Temp	Chemical	7 (mary sis Tricquires
WCC-73-H	W(C-15	WATER	BAILED	40 ME VOA	115	MIE	
ncc-15-13		1	- 1				
4CC-75-12							
ucc-75-15	1 7						
WCC-65-1A							
wcc - 65-18	1						
WCC-65-1R							
	7				++-		
WCC-05-15	1160-175	 					
WCC-125-1A				-	1-1		
WCC-125-18	T	-	 		++,-	 	
MCC-172.15		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	- \/ -	· · · · · · · · · · · · · · · · · · ·	$+ \forall -$	 \ \ \ 	
WCC-125-15	 	V	<u> </u>	<u> </u>	+ -	3	
					 		
				-			
					+		
	<u> </u>						
				-			
					<u> </u>		
Total Number of	Samples Sh	ipped: /z	Sample	's Signature:	to yes		
Relinquished By:	7h	016-		Received By.	10, 1	. B. Carlos	Date
Signature		than Glas	- 4444	Signature Printed Name	A1:57	HILE FILEN	in 11/7
Printed Name Company	W	20	Sylary	Company	1 190 AV)- (LYDE IN	<u> </u>
Reason -	leliver.	to LICA	2				<u> </u>
				Received By:	mh	1 Taylo	Date
Relinquished By: Signature	1. 11.11	C. XI	1	Signature <i>T_I</i>	41)	Janes Y/O	
Signature/ Printed Name/ Company	J-RK F	1 46643	J) { X	Printed Name Company	m	essamer	Time
Reason/*/	1.5 14	16		Company	· _ / _ / _ /		1 1
Relinquished By:	Λ -	. 2		Received By:			Date
Relinquished By: Signature	al >	gor-		Received By: Signature			1019 189
Printed Name				Printed Name_	JOB C	į.	Time
Company				Company	V CAS	13882	12:38
Reason				Received By:			Date
Relinquished By: Signature				Signature			/ / / /
Printed Name				Printed Name_			Time
Company				Company			
Reason							I
Special Shipment	/ Handling	/ Storage	Requiremen	ts:	C.16.	Ana (7:4) 8	35-6886
CONTAC	T: PE	eter (16	apsmon	or Alistaine	(4/ 0/	vae:	_
					;		
_					_:_		
* Note — This d	oes not cor	istitute aut	norization t	proceed with analy	SIS		LA/OR-0183-42

PROPERTY OF CG-ENV.

BORING LOCATION See Location Map			ELEV	ATION DATU	м	52.43	Feet	above MSL
DRILLING AGENCY Gregg Drilling, Inc. DRILL	LER C. Swe	nson	DATE STAR		9-25	-89	DATE FINISH	HED 9-25-89
DRILLING EQUIPMENT Mobile B-57 With 11-Inch O.D.			COMI DEPI	PLETIC H (ft) 3	0.0	ROCK DEPTH	
TYPE OF WELL CASING PVC Sch. 40 SCREEN PERFORATION	0.010 Inc	m	BORI	ETER NG (i:	n)	11	WELL.	TER OF 4
TYPE/SIZE OF Monterey #0/30	TYPE/THIC OF SEAL(S	CKNESS 3)	(1/	9") Ber	tonite Pel Co	lets, 3 Fe ncrete Plu	et/Volclay	Grout 47 Feet/
No OF SAMPLES DIST UNDIST. 10	CORE		LOGO	ED B	_Y Reye	c		KED BY . Glaesman
WATER DEPTH (ft) FIRST 73.7 COMPL -	24 HRS.7	1.05		! ! •				. Gidesindii
DESCRIPTION	21:	10N	,	SAI	MPLE	S	(e)	
[DESCRIPTION	LITHOLOGIC	LETION			O. V. A.	(ppm)	ng Tim	REMARKS
	유명 : :	MPI MPI		0 -	d-	Back- Ground	illii te(
	LOG	WELL COMPI	No.	Type	Head- Space	Bac	Drilling Rate(Time	
3 inch AC, 3 inch of base sandy gravel. Very moist, black, CLAY (CH).	<u> </u>						1020	
very moist, black, CLAT (CH).	‡ [▽							
+	‡	A A	+					
Hard, moist, very dark brown, SILTY CLAY		∀	-					
5 + (CL), with fine grained sand.	+ 1		F.1	X 35		8.4	1030	
†	‡ [1 6	<u> </u>	\triangle	8.8	0.4	1030	
1 ‡	† /		†					
Becomes very stiff, moist, olive brown SILTY CLAY (CL).	Ŧ Ł							
10 - SIETT CEAT (CE).	Į ľ		$\mathbb{E} \mid$					
1 4	<u> </u>	4 /2	4					
+	‡	J 1/3	‡					
Very stiff, very moist, olive brown, CLAYEY			‡					
+ Very Stiff, Very Moist, onve brown, CEATET + SILT (MH).	į į		1					
15 +	+	1 1-	$\frac{1}{2}$	H2.		70	1077	
†	† /		2	X 25	8.6	7.8	1037	
1 ‡	† Y		+					
 	† [+					
20 -	Ī	4/2	1					
1 1	‡	7 /,	+					
+	+		<u> </u>					
Dense, moist, olive brown, SILTY fine grain			1					
†SAND (SM), some shell fragments.	~ }]					
25 +	+ 1		7 3	3 9	84	7.8	1046	
†	† 1		本	М,	1 04	/.0	1040	
I	ΞÜ	11	Ī					
1 ±	Ţ		Ţ					
30 - Bacaras vary dance vallewish beauty wi	<u></u> ‡ ∤) <i> </i>	+					
Becomes very dense, yellowish brown winner shells.	+		‡					
1 ‡	‡ [,	4 /	4					
1 ‡	 		1					
	<u></u> †	$\{\}\}$	†					
35+	<u>+ </u>		<u> </u>	14	6 8.0	7.8	1057	
Project: DOUGLAS AIRCRAFT CO. Project No.: 8941863J		LOC	, (F(BOI	RINC	g DA	$AC-P1 \mid \frac{Fig.}{1}$
Project No.: 8941863J								RD-CLYDE CONSULTANTS





BORING	ON					EVATION ID DAT			
DRILLIN	₽G DRILLER D					ARTED			DATE FINISHED
DRILLIN	1G				CC	MPLETI			ROCK
TYPE (OF	SCREEN PERFORATION			DI	AME TER	OF		DEPTH (ft) DIAMETER OF
No OF	CASING DIST.	UNDIST.	CORE			ORING (1			WELL (in.) CHECKED BY
SAMPL WATER	FIRST	COMPL.	24 HRS.		+				·
DEPTH	(ft) .		1	1	<u>ـــــ</u>	<u> </u>			
_			=			SAMPI ORMA			
DEPTH (feet)	DESCRIP	TION	WELL	_				i e	REMARKS
DE S			LOG			٠ ج	0.V.A.	gn 2	
j -				o Z	Type	Blow Count	(ppm)	Drilling Rate (Time)	
				† -	\sqcap				
	. Medium dense, moist, ligh - fine grained SAND (SM)		‡	Λ					
	· one grunned SAND (SM).		<u></u>	11					
	Unified Soil Classification	System (USCS). —	- }₹		/\				
	· Sample Identification Num	nber.		-					
5	- Sample Location and Type			-	$\sqcup ert$				
	Concrete		‡						
	Concrete		‡			Λ			
	Bentonite Pellets		‡			' `			
	Demonite reliets		‡				Λ		
10	Native Soil		<u></u>				' '		
	The soll		1					$ \Lambda $	
			Ī					11	
‡	Monterey No. 0/30 S	Sand Filter Pack	‡						٨
			‡						/\
	Screen		‡				1		
15	· 🗖		†						
	Modified California S	ampler.	- I						
		- F	<u> </u>						
	Bentonite (Volclay) G	irout	Ŧ						
‡			‡		.				
20	· [00]		‡						
‡	Pea Gravel (1/4"-1/	(2")	‡						
			†						
	Continuous Core Sam	nple	†						
1	Ш		<u> </u>						
25	Number of Blows Require	d to Advance Sam	pler		-				
-	One foot using a 140 Pa	ound Downhole Ham	met						
‡	with a 30-inch Drop. —		+			厂			
‡			‡						
	Organic Vapor Analyzer ((OVA) Readings	<u> </u>						
	(field headspace).		Ţ						
30	Rate at which Drilling Pro	00102585	<u> </u>						
	Time at depths noted.		1						
<u> </u>	,		<u> </u>						
Ŧ	Remarks or Comments by	y Driller or Drilling	Ŧ						
‡	Supervisor.				T	<u> </u>			
35	•		‡						
			‡						
‡			<u> </u>						
Pro	ject: DOUGLAS AIRCRAFT COM	PANY-TORRANCE		٠	1	<u> </u>	1		7.3
Ì	ject No.: 894186	į		ΚE	ΞY	TO	BOR	ING L	.0G
	JULIE 140 037100								B-!
								JOOW .	DWARD-CLYDE CONSULTANTS

